Volume XXX ~ Number One Spring 1951

Bell Telephone MAGAZINE

The First 75 Years • RALPH E. MOONEY

The Big Little Things of Bell System Operation
MYRTUS A. DAVIS

Seeing Ourselves as Others See Us • C. THEODORE SMITH

The Foundation of the Bell System's Ability to Serve the Nation

Metropolitan Service for Suburbanites • PETER A. DOLAN, JR.

Human-Interest Aspects of Stockholder Correspondence
JOHN K. TORBERT

American Telephone & Telegraph Company · New York

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A Medium of Suggestion & a Record of Progress

Published for the supervisory forces of the Bell System by the Information Department of AMERICAN TELEPHONE AND TELEGRAPH CO., *195 Broadway, New York 7, N. Y.*
LEROY A WILSON, *President;* CARROLL O. BICKELHAUPT, *Sec.;* DONALD R. BELCHER, *Treas.*

Who's Who & What's What

in This Issue

THE UNIQUE PHOTOGRAPHS of Alexander Graham Bell shown on pages 208–211 of the article "The Telephone's Inventor Elected to Hall of Fame" in this MAGAZINE for Winter, 1950–51, were taken by Dr. Gilbert Grosvenor and are copyrighted by him. They were made available for publication here through the kindness of Mr. Melville Bell Grosvenor.

BY BOTH position and experience, RALPH E. MOONEY is ably qualified to tell us about the telephone's first seventy-five years. Historical Librarian of the A. T. & T. Company's Historical Library since 1945, he had been before that Editor of the *Southwestern Telephone News* of the Southwestern Bell Telephone Company, and he had had some years of newspaper and trade journal work before joining that company in 1924. He came to the Information Department of A. T. & T. in 1944 from St. Louis. "Robert Devonshire's Letterbook," published in this MAGAZINE in the issue for Summer, 1949, is his most recent contribution to these pages.

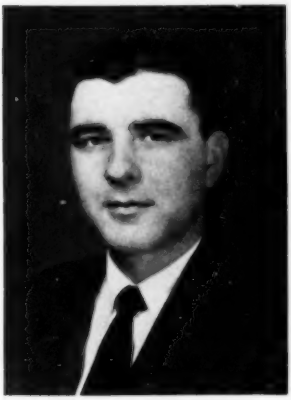
THE FIVE YEARS before MYRTUS A. DAVIS began his Bell System career included experience with three engineering firms, a year as a teacher of engineering, and service in World War I. In 1920 he joined the engineering division of the Department of Operation and Engineering of the A. T. & T. Company in New York. His observations on the importance of little things in the telephone industry reflect his three decades and more of interest in problems relating to the design, installation, and upkeep of central office and station equipment.

THE FIRST DESCRIPTION of the Bell System's opinion surveys—the methods and findings—was published in this MAGAZINE five years ago, in the issue for Spring, 1946. C. THEODORE SMITH was a co-author with Arthur H. Richardson, now retired, of

Ralph E. Mooney

Myrtus A. Davis

C. Theodore Smith



Peter A. Dolan, Jr.

John K. Torbert

"Finding Out What People Think of Us." Mr. Smith joined the Statistical Division of the Comptroller's Department of A. T. & T. in 1929 and his present title is "Statistician—General Research."

AFTER FOUR YEARS in the Army Signal Corps during World War II, PETER A. DOLAN, JR., spent five and a half years in metropolitan newspaper work in New York City—including police, sports, and financial reporting—before joining the Public Relations Department of the New York Telephone Company as a staff writer in January of 1950.

(The aerial view of New York City used with Mr. Dolan's article was obtained from Fairchild Aerial Surveys, Inc.)

EXPERIENCE in a bank, as a teacher of English, and in two well known publishing houses preceded JOHN K. TORBERT's entrance in 1921 into the Treasury Department of the A. T. & T. Company, where he is now supervisor of the Communications Bureau. His "Answering Stockholders' Letters by Telephone" was published in the *Bell Telephone Quarterly* in October, 1935.

Index Now Available

AN INDEX to Volume XXIX (1950) of the BELL TELEPHONE MAGAZINE may be obtained without charge upon request to the Information Department, American Telephone and Telegraph Company, 195 Broadway, New York 7, N. Y.

"Mr. Bell, I heard every word you said—distinctly!" exclaims Thomas Watson as he hurries through the door in response to Alexander Graham Bell's urgent summons: "Mr. Watson, come here! I want you!" That first sentence ever to be transmitted by telephone was spoken seventy-five years ago last March 10. ***See the article beginning on the opposite page.***

In the Three-Fourths of a Century Since Bell's Invention Carried Its First Message, the Telephone Has Achieved a Position of Vast Importance to Our Way of Life

The First 75 Years

Ralph E. Mooney

Author's Note: Any review of historical affairs must include some interpretation of trends and events. Where this occurs in the present material, it is perhaps needless to remark that the opinions and deductions of this writer are not necessarily those of the management of American Telephone and Telegraph Co.

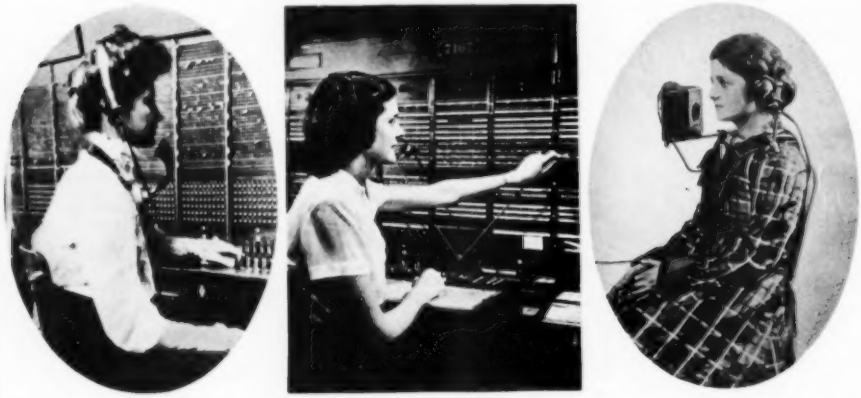
BELL'S TELEPHONE transmitted its first complete sentence on March 10, 1876, between two rooms on the top floor of the boarding house at 5 Exeter Place, Boston, where Bell had been experimenting with it. After demonstrations and tests during the rest of that year, it passed quickly into public service. By May of 1877, fourteen months after the first sentence was transmitted and only eleven months after the notable public demonstration at the Philadelphia Centennial Exposition, telephones were being rented to the first Bell customers. They were rented in pairs, to be used on private lines, and by October 1877, about two thousand were in service.

Viewed in perspective, the story of American telephone service from then on is amazing.

We in the business can say this in all modesty, for we are not taking credit for the amazing factor in that story—the public attitude which changed so swiftly from amused indulgence of a novel gadget to steadily increasing demand for service.

The telephone is a means of communication. Other means may be used for the same purpose. How is it that America made such wide use of this means while the rest of the world did not?

Our statisticians recently calculated that if telephones in the United States bore the same relation to population as in the eight foreign nations with greatest telephone development, we should now have less than ten million telephones in this country. Instead of which, we have more than 35,000,000 Bell and eight million In-



Operators Then and Now:—The cumbersome headset at the right was used for a short while in 1878. The operator at the left was photographed about 1900. Today's operator, center, wears the Bell Laboratories' latest development in headsets

dependent telephones in the United States—43,000,000 altogether—and this, after starting from a figurative "one" in 1876, with less than a year's headstart over these other nations. Why the disparity?

National Temper and Income

"DEMOCRACY" is one explanation: our telephone service is a result of free enterprise in a free land. Such a service could only have grown where freedom encouraged such a man as Bell to indulge his vision of some day "talking by telegraph," and where other men of vision and science, year after year, were encouraged to contribute the inventions and improvements that added to the reach of the human voice until it became possible to carry on a conversation across the continent or even around the world as easily as across the street. These considerations indicate something more, however. First of all, America's real wages or purchasing power, increasing decade by decade, combined with the telephone industry's accomplishment in reducing telephone rates from time to time or preventing rates from rising as high as the general price level during inflationary periods, made it possible for a constantly greater number of people to make use of telephone service. Also, there is undoubtedly, in the American democracy, a national temper or mental attitude that does not hesitate to go after what it wants, and that feels free to do so at any time.

This national temper was, and is, an amazing factor in the growth of our telephone service. Enterprise played its part capably in demonstrating what the telephone could do, and in educating people to use it. And, since management was left free to do this, our form of government accounts to a large extent for the growth, in a little more than three score years and ten, of national facilities that carry an estimated 170,000,000 conversations a day.

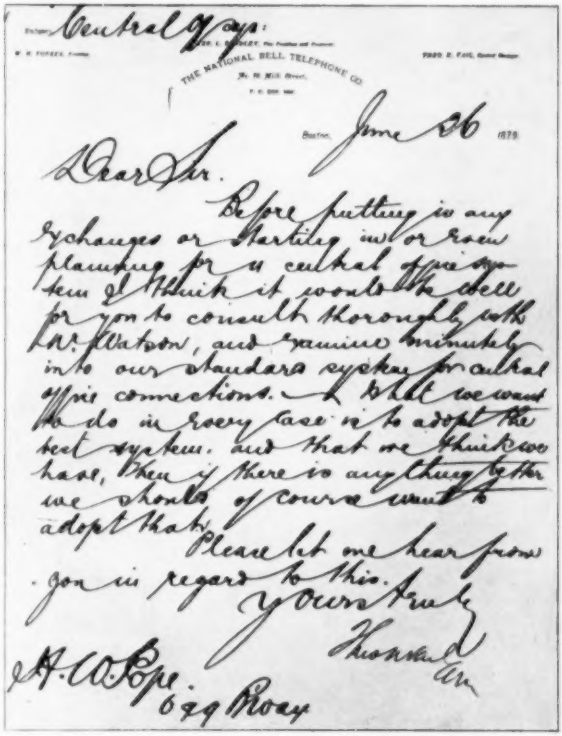
But ever and always it was the American people who adopted telephone service as soon as they had been convinced of its value, and who became the customers that kept management hard-pressed to provide a service to meet their needs.

The Growth of Cities

THE TELEPHONE came on the scene during a great population shift from farm to city. This had been under way in America for several generations, caused partly by dislike of isolation and envy of the city dweller's lot, but chiefly by the growth of the factory. As manufacturing increased, cities had become labor markets, and cash income was the main incentive that held people in town and drew others from rural districts.

Arthur Schlesinger notes in *Growth of the American People* that, in 1830, one out of every fifteen persons in the United States dwelt in places of 8,000 or more population. By 1860, it was one out of six; and by 1890, three out of ten—very nearly one out of three. Schlesinger also calls attention to the fact that during the century from 1790 to 1890, the urban population in the United States grew 139-fold while the total population increased but 16-fold—"this despite the titanic energies that had gone into subduing the wilderness."

So the telephone was in no way a cause of big city growth. But coming when it did, it had considerable influence on the form of American cities. Steam and electric street transportation dates from about the time


Central Ways:

THE NATIONAL BELL TELEPHONE CO.

Boston, June 26 1879

Dear Sir.

Before putting in any Exchanges or Starting into new planning for a central office system I think it would be well for you to consult thoroughly with A. Watson, and examine minutely into our standard system for central office connections. What we want to do in every case is to adopt the best system, and that we think we have, then if there is anything better we should of course want to adopt that.

Please let me hear from you in regard to this.

Yours truly

Theo. N. Vail

A. C. Pope.
629 Roxy

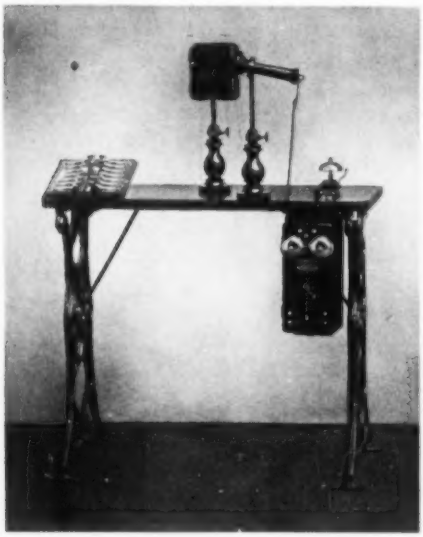
As early as 1879, Theodore N. Vail, then general manager of the National Bell Telephone Company and later head of the entire Bell System, established the standard of telephone operation when he wrote a prospective exchange founder that "What we want to do in every case is to adopt the best system, and that we think we have. Then if there is anything better we should of course want to adopt that."

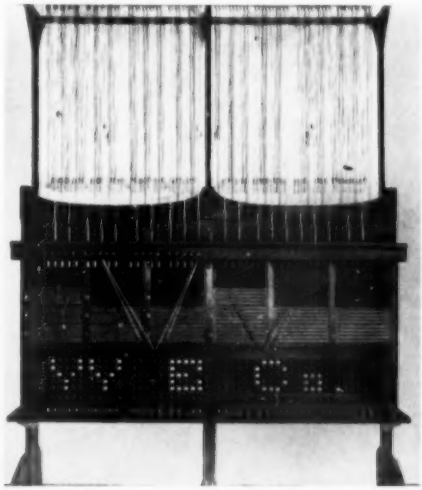
of the telephone itself. Steam and hydraulic elevators had been in use since the 'Fifties, but the first electric elevator was to go into service in 1889. The telephone combined with the street railways and elevators to lift city buildings to skyscraper heights.

During the last three decades, however, the trend has been the other way—from the cities toward the country. Highway and rail transportation, pavements, and street and snow-cleaning equipment have made possible much wider dispersion of business and residence areas, and suburban populations have been growing at a rate from two to three times faster than city populations. Therefore, the telephone is today a main reliance of those who plan to live in the suburbs or to set up industrial plants in rural surroundings.

Pattern for Growth

A COMBINATION of circumstances caused the burden of starting the telephone business—and the Bell System—to fall on four men: Gardiner Greene Hubbard and Thomas Sanders, who had financed Bell's experiments; Thomas A. Watson, who had been his laboratory assistant; and Charles Williams, Jr., who manufactured the first telephones in his electrical shop at 109 Court Street, Boston, and who incidentally furnished





Switchboards for interconnecting subscribers' telephones were a major concern of early telephone men. The 1879 model at the left was the operator's position in a system which also required the services of a switchman at the frame where the lines terminated. He had to tell her when there was a call to answer and she had to tell him which lines to connect. The model at the right, manufactured by the Western Electric Company—note the initials spelled out by the "drops"—for use in Detroit in the mid-'Eighties, represents a transition toward the normal manual switchboard, although the plugs are drawn down from above to establish connections

This Law switchboard served at St. Louis through the 'Eighties. Girl operators had not yet entirely ousted boys from the operating room, and the male chief operator and manager was an important part of the picture

the first Bell Telephone Company with office space there.*

These four set the pattern for Bell System growth. They were responsible, first of all, for the policy of renting telephones instead of selling them outright to let the buyer make what use he might of them. This made the "telephone company," and its licensed representatives, responsible not only for telephones but for the service they gave; obviously, the most far-sighted and proper policy that could have been adopted. It has contributed vastly to the present eminence of American telephone service. Had the counterproposal—to sell outright—prevailed, the incentive to steadily improving service would have fallen to other and, quite possibly, less interested hands. Certainly, development would have been hindered by diverging interests and confused standards.

What might have been is unimportant, however. These four men did start the Bell Telephone System. Hubbard and Sanders, at the head of the enterprise, gave way in turn to Colonel William H. Forbes, Howard Stockton, John E. Hudson, Frederick P. Fish, Theodore N. Vail, Harry B. Thayer, Walter S. Gifford, and Leroy A. Wilson. Watson, as research head, was succeeded by Thomas D. Lockwood, Ezra T. Gilliland, Hammond V. Hayes, John J. Carty, Frank B. Jewett, and Oliver E. Buckley. As engineer and inventor, Watson's work was taken up by Charles Scribner and Leroy Firman, who improved the early switchboards with nearly incredible speed; John A. Barrett, who was responsible for transposition circuits and cable; Anthony C. White, who developed the forerunner of the present-day transmit-

* See "Robert Devonshire's Letterbook," MAGAZINE, Summer 1949.

ter, and the host of others who attacked and solved specific problems. Charles Williams, when he retired, was among those who were responsible for choosing Western Electric Company, as the best of six manufacturers then in the field, to become the manufacturing and supply organization of the System.

The original Boston headquarters licensed agents to rent telephones to customers in specified areas. After George W. Coy had opened the first commercial exchange at New Haven, on January 28, 1878, new licenses were issued to telephone exchange companies. Headquarters furnished the telephones and gave as much advice and assistance as was possible. Bell System headquarters in general continues these functions today. But since the American Telephone and Telegraph Company, which is now headquarters company of the System, was organized in 1885 to build and operate long distance lines, it continues that function too, through its Long Lines Department.

Litigation and Competition

THIS WAS the framework within which, growing as the nation grew, the Bell Telephone System has come to furnish its present four-fifths share of the country-wide telephone service.

Looking strictly at "now" without reference to "then," it is a temptation to conclude that the building of the Bell System was a task that called only for steady steering along an easy course. But that is far from true. From the moment the telephone had proved its commercial value, it had attracted inventors to seek a way to duplicate it without infringing the basic patents taken out by Bell, one in 1876 and the other in 1877.

Bell's telephone was an amazingly simple device. It seemed that there must be some way to make another that would give the same service without using the methods covered in his patents. In time, it became evident there was no other way, but many an inventor sincerely believed he had found one—until the courts ruled otherwise. A condensed narrative of the litigation to protect the Bell patents from sincere and insincere inventors makes a volume of 795 large pages. The validity of the patents was tested in more than 600 such legal actions, all of which ended in success for the Bell System, only five of them going to the United States Supreme Court. But while the cases were in progress, the fighting was bitter. In fact, a few men made a kind of hit and run, guerilla warfare of it by operating a telephone service until enjoined from so doing, then reopening under another name or in another combination elsewhere.

The Bell companies had very little capital to start with, but throughout most of the years of litigation, they were able to find money for their needs and support for their undertakings with reasonable ease. Nevertheless, their resources throughout that period were relatively small compared to the resources sometimes gathered against them in the courts. For, as telephone service developed and the prize became richer, many able and ingenious adventurers were tempted to muscle in on it—to use modern vernacular. But the Bell companies won through.

When the basic patents expired in 1893 and 1894, the methods and ap-

paratus protected by them went into the public domain. This made it possible for anyone to go into the telephone business without license from the Bell. The companies that undertook to do so came to be called Independents because they did not need this license. Competition between Bell and Independent companies was strenuous for a time, and in some towns and cities two exchanges sought to serve the same public. Many subscribers in such communities felt compelled to use both services, and found this inconvenient as well as expensive. Before long, however, a series of arrangements was worked out whereby duplicating telephone services were consolidated, through retirement of either the Bell or the Independent from a given exchange area, or occasionally by combination of Bell and Independent properties in a new corporation. Moves toward interconnection of Bell and Independent systems for long distance service—that is, moves toward the present nation-wide service—began very early in this century.

Growth Within the License Framework

IT APPEARS IMPORTANT to call attention again to the fact that the founders of the System issued licenses to operate Bell telephones under the basic patents, and leased telephone instruments to be used in telephone service. As part payment for the licenses, they often received stock in the local companies. As the original license holders grew in size, it became convenient to combine the managements into larger organizations—until the present System, made up of parent company and 22 wholly or partly-owned regional operating companies, was evolved. This was a joining of smaller Bell units within the original framework of the System.

Most of the subsequent growth of the operating units of the Bell System has been within the framework so established, and has consisted largely of the extension and improvement of facilities to keep pace with the increasing need for service in and between the areas served by the licensee companies.

As has been seen, the problems created by duplicating telephone services within an exchange were solved in some cases by the Bell company purchasing the Independent property,

Adoption of the telephone for fire and police protection was prompt, as illustrated by this woodcut of a street scene in Chicago in the early '80s

and in other cases by the Bell company selling to the Independent. But where a duplicating service was purchased, the purchasing company grew in size only by the telephones that were not duplicated, while telephone users gained through having an improved service, and only one telephone bill to pay.

So, although Bell companies have purchased some Independent companies, and some Bell properties have been sold to Independents, the main growth of the Bell System has come through providing service steadily through the years to meet increased demands from constantly growing communities.

The Telephone Art

WHEN BELL had occasion to speak to an audience of electrical engineers in 1916, he said he hesitated to talk of the telephone to men who had gone so far beyond him in the art of making use of the thing he had invented. He found the story as amazing then as we find it today.

By that time, telephone switchboards had developed from crude affairs, which often would not permit more than four simultaneous conversations, to block-long manual boards with lamp signals and divided multiple. Circuits had been improved again and again. The whole art of making lead-sheathed, paper-insulated cables had been developed for so long that most main city lines were underground. The telephone instrument had been the subject of at least five major improvements, and many minor ones.

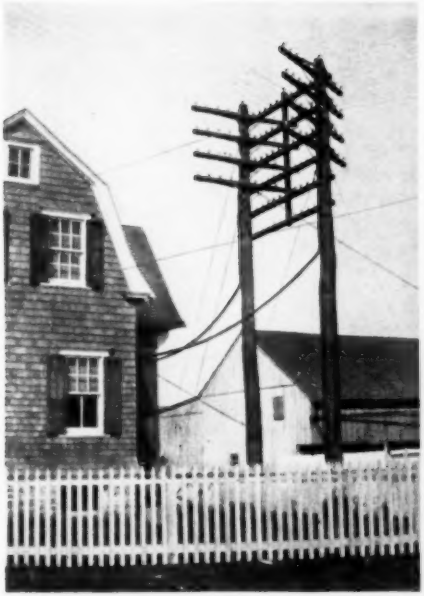
Boy operators had become a legend except in a few small towns, where they still handled the night shift.

And the girls who had replaced the boys had been answering line signals with "Number, please?" since 1895, making it by this year of 1916 one of the most-used word combinations in the English language.

ALMON B. STROWGER'S system for electrical switching of calls, invented in 1889, had had its first installation at La Porte, Indiana, in 1892. By 1916, it had been developed into the step-by-step system and was serving in several large and many small exchanges. The Bell System was soon to make large installations of it, and relatively soon to begin manufacturing it at Western Electric Company under license agreements with the holders of step-by-step patents.

Bell System engineers, who had been giving intense study to dial telephone service since 1905, also had developed a form of switching equipment called panel type. This was especially designed for installation in large multi-office cities, which called for piece-meal change-overs from manual to dial switching. Panel type equipment was ready for service in 1916, but World War I material shortages delayed the first installations until after 1920.

Long distance service, in 1916, reached across the continent, and not far ahead lay the beginnings of transoceanic telephone service and ship-shore telephony. Also close at hand was the amazing growth of radio broadcasting from experimental stations (1919) to coast-to-coast networks (1927). Nor must we forget the introduction of carrier telephony (1919), transmission of photographs by wire (1924), and television (1927).



The sturdy "H" fixture was erected to carry lines from three directions into the central office at Temple, Pa., about half a century ago. The terminal pole with the neat "crow's nest," shown at the right, was

in service in Tuxedo, Maryland, in 1899

Recent Developments

AT A DEMONSTRATION in 1935, Walter S. Gifford, then President of the American Telephone and Telegraph Co., talked around the world to T. G. Miller, Vice President, in a nearby office at 195 Broadway, New York City. And a year later, 1936, the Bell System made available crossbar switching for dial offices. The first commercial installation of this was cut into service at the Troy Avenue office in Brooklyn, in 1938. In cities with many central offices, crossbar equipment operates more simply than panel or step-by-step, with greater economy of space and less liability to interruption. Since it operates with a minimum of wear on the switching contacts, it permits the use of precious metal contacts, which have superior freedom from noise and other troubles.

Except for the placing of a transcontinental cable line and expansion of service for military needs, construction came to a practical halt as the United States began building defense forces for World War II. But since the war's end, mobile telephone service has extended switched telephone service to automobiles, trucks, taxicabs, ambulances, and trains, and has added many on switch engines, harbor craft, and steam vessels. A coaxial cable network has been placed

A typical scene of half a century ago: the corner of Davis and Lexington Streets in Baltimore, Md., in 1899

in service. Microwave radio relay transmission also has become part of the Long Distance network. Operator toll dialing and automatic message accounting have been developed.

On farms and in rural areas, more than a million and a half telephones, added since the end of World War II, plus installations by Independent companies, continue to assure America of more and better rural telephone service than any other country. Across the land, one out of every two farms has telephone service.

All of these were steps toward a more complete and a better telephone service. Now, in 1951, those who look ahead in the Bell System are working out many more advances, such as equipment by means of which customers can dial calls directly to points all over the country, for one instance, and devices that will automatically answer the telephone and record messages during the absence of the subscriber, for another. Bell Telephone Laboratories also is actively engaged in the development of a number of improvements that will increase the convenience and usefulness of subscribers' station equipment.

The Results

WHAT DOES all this mean? What effect has seventy-five years of constantly growing and improving telephone service had on our country? What has the steady betterment of equipment done beyond—as the late Clarence Day once said—affording us the opportunity to talk, just talk?

A glance at a modern American community reveals answers to these questions. Community health is protected by public officials and commissions, plus a system of public and private physicians, hospitals and laboratories, linked by telephone lines, capable of quick interconnection and even conference consultation in times of emergency. Police and fire de-

partments are similarly linked, station house to station house, headquarters to city hall, and even car to car, to guard public safety and aid the administration of government.

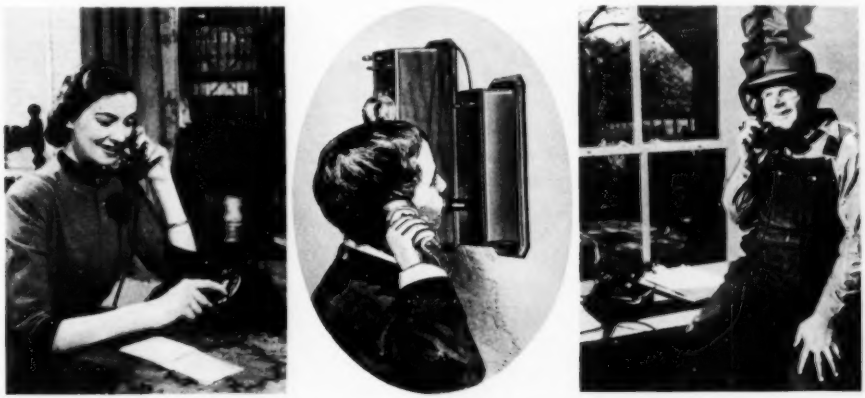
Community livelihood depends largely on telephone transactions. Even retail businesses are carried on nearly as much by telephone as by personal contact. And social life is so bound up with telephone service that it becomes extremely difficult when emergencies such as last November's great storm in the northeastern states cause interruptions that cannot be cleared within a few hours.

Over and beyond these considerations lies that of the peculiar value of the telephone to voluntary civic activities, such as those of the Boy Scouts, the church guilds, and the countless committees and clubs for one purpose and another. For these voluntary activities and self-imposed duties are the very life-blood of democracy. It is through them that its most important work is accomplished, and through them that the public spirit for common endeavor is kept alive.

A WRITER in *Fortune* for February, 1951, puts it this way:

"The truth is that Americans are just about as busy with their non-official, unremunerated, voluntary activities as they are with their official duties; and these unpaid, unofficial, off-duty activities have a deeper and more lasting effect upon American life, and even American policies, than do the official ones. In their official capacities Americans are busy business men, busy lawyers, busy politicians, workers, soldiers, teachers, housewives, etc.; but, when one has described all of that, one has still not touched the unique nerve of American life, which constantly stimulates initiative and at the same time makes these people truly 'self-governed.'

"The tradition is a long one, and was noted by Tocqueville more than a hundred years ago. 'If an American were condemned to confine his ac-



Telephone Users Then and Now: —The central drawing, from a very early directory, was accompanied by instructions to place the lips "in the mouthpiece." The modern users demonstrate telephones in service in the city and on the farm.

tivities,' said that sage observer of the U. S., 'he would feel robbed of half his existence.' "

Today, telephone service is a main reliance of the many busy people who engage in the many activities. They are able to notify, consult, and even bring about committee action in a series of calls. And since these social and coöperative activities all aim broadly or narrowly to improve the wellbeing of communities all across the land, the value of dependable telephone service to community and nation can be set high.

The telephone's most important attribute in affairs public and private, local, national, and international, was neatly stated in a recent advertisement: it gets things done quickly.

Plantation Party Line

The following letter was received by the Southern Bell Telephone and Telegraph Company from a new customer on the Last Jump-Off Plantation near Shelby, Miss.:

Thank you for the new telephone line. I'm sure you think we didn't appreciate it, but it is wonderful. The coming of the party line taught me something new to appreciate about the American way of life. For the first few days, the other parties used it continuously, from the smallest to the oldest in the family. They called everybody back and forth and held the baby up to say something. Not knowing the different "rings," I kept answering by mistake for about three days until I learned to distinguish my own ring. Then we realized these people, first generation Americans, had not been accustomed to telephone. Nowhere else are so many enjoying so great a number of benefits as America. We just take our privileges for granted until we see how much it means to those who have never before had such privileges.

Life has settled down now. School has started and the cotton moves to the gin. I can call the schoolhouse or the church or the gas station or the drug store or the hospital, as we did today. Or we can call home or to our friends or on long distance business calls we do each week. That telephone saves a lot of mileage. We sold a tract of timber Saturday by long distance, and arranged to meet Grandma by the same way at Greenwood last week.

As for my new party line neighbors, they're nice too. They take messages if I'm not in (I farm on the turnrow, you know), and tell my friends I'm out so they can call again. Telephones make neighbors out of folks that don't have time to visit.

Goodness, this sounds like a commercial for telephones. Really, it is just intended as gracious thanks for the new line, and appreciation for your part in it.

I simply don't think Last Jump-Off Plantation would be completely mechanized without a good telephone. So thanks to your district manager, and all the nice guys up and down the "lines" who fixed us up with a new party line.

Freedom to Serve in Freedom's Defense

For three quarters of a century the Bell System has rendered service of more and more value to the American people. The telephone began in this country. Here it has been most widely developed and used. Our service has always been the best in the world, and its greatest increase in usefulness has come in the last five years. This is a great asset in helping to defend the freedom of the United States.

Our telephone service is also a product of freedom. In the building of the Bell System, countless discoveries and inventions have had to be achieved by the inquiring spirit of free men. Opportunity has been open to all. Competition has flourished throughout the organization. Worthwhile incentives and reasonable rewards have fostered the will and capacity for leadership. In the rendering of service day by day, the responsibility to get the message through is accepted as a public trust: that too is the exercise of freedom.

All that has been achieved flows from the nation we serve. Under public regulation, the Bell System has generally been allowed the freedom it needs to perform its service well. It is essential that this freedom to serve be undiminished; that research and invention go vigorously forward; that new leaders be encouraged and prepared to lead; and that earnings be fully adequate to continue to pay good wages to employees, and a return to investors sufficient to attract and protect the billions of dollars of savings that make the service possible.

Through the years private enterprise and public policy in telephone communication have returned to the nation a value beyond price. We are confident they will do no less in the years to come. We are determined to meet the responsibilities entrusted to us, and we pledge our utmost efforts, always, in devotion to the public service and to the lasting security and advantage of the people of the United States.

From the A. T. & T.
Annual Report for 1950

Small Improvements Have Very Great Significance when Multiplied by the Vast Quantities Which the Bell System Requires in Serving Its 35,000,000 Telephones

The Big Little Things of Bell System Operation

Myrtus A. Davis

THE BELL SYSTEM'S telephone plant presents a large-scale paradox. For while it is being continuously renewed and improved and extended, never at any one time is there such a thing as a whole new model. Therein it differs markedly from many other physical elements of the American economy.

No normal year is complete without its announcements of the next year's even shinier automobiles. Refrigerators, television sets, sun lamps —all the gadgetry of modern living is changed from one year to the next. And since the new is always advertised as better, there is ever the implication that whatever it supersedes is—or is becoming—obsolete.

Not so this country's telephone equipment. You just can't trade in an entire telephone system for a new one.

What you do, instead, is constantly to invent and develop and improve and then, when what you have invented or developed or improved has been tested and found good, you incorporate it in or add it to the telephone layout. Perhaps, indeed, what you actually have is always a new model. It is, at any rate, continuously moving ahead.

In this process of steady physical improvement, there are two factors of major importance.

One is that every new or better item must work harmoniously with all the other plant now in service. It may be as radically different an invention as the transistor, which appears to be about ready to take over some of the duties and responsibilities of the vacuum tube and do them more handily. It may be in as straight a line of development as the newest type of telephone, which makes possible the use of smaller wires in telephone cables. But whatever may be the element developed

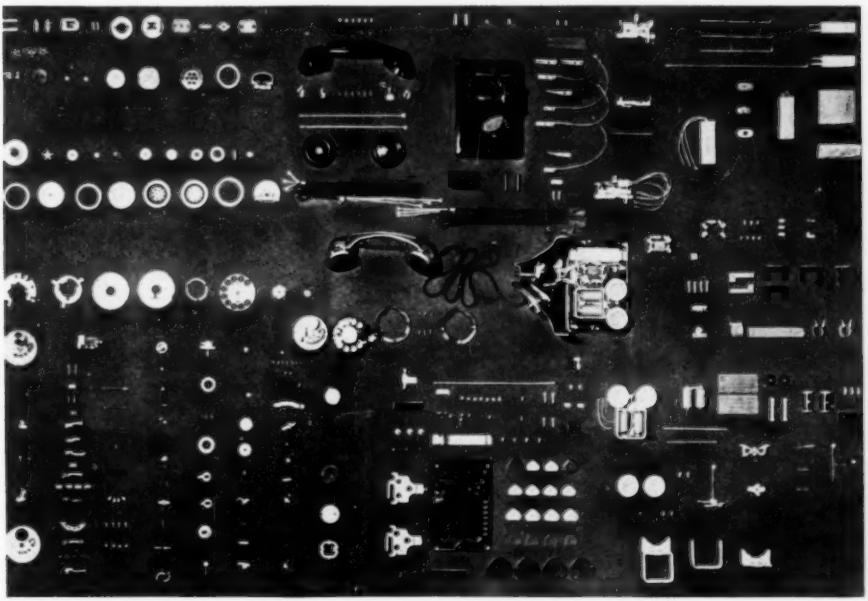
or improved, each must be so designed that it will operate smoothly with the Bell System's ten billion dollars' worth of existing telephone plant.

The other factor is that of size, of immensity, of a sometimes almost unbelievable multiplicity of things. The Bell System is necessarily a big outfit. Some of the things it uses must be multiplied almost *ad infinitum*. No matter how small or seemingly unimportant some item may be, sheer numbers may make it big and important. That too is a consideration in physical improvement.

Drop Wire

LET US START our discussion of the bigness of little things with the matter of drop wire, one of the most commonplace components of telephone plant. Except in business centers, where most of the wires enter the buildings under ground, drop wire extends from the telephone pole to the house or other building, and is the connecting link between the wiring on the customer's premises and the open wire or cable running clear in to the central office. Drop wire originally consisted of two metallic conductors insulated with rubber and covered with an impregnated braid. Like any other object exposed continuously to the elements, drop wire inevitably suffered deterioration from nature's bombardment of heat, cold, sun, rain, snow, and sleet.

Since World War II, the Bell System has been using drop wire having rubber insulation covered with a neoprene jacket. It withstands the elements so much better that the rate



Little Things:—The 433 components of a Bell System combined-set telephone

This telephone installer is connecting a drop wire between the pole and the customer's house

of deterioration is greatly reduced. The new neoprene-covered drop wire wears so well, in fact, that not infrequently it is possible to use it more than once: i.e., to remove it from its original location when that telephone is disconnected and to run it again from pole to house for a new installation.

How important is such a change as better insulation on drop wires? Here your multiplication factor comes into play.

There are about 25,000,000 drop-wire installations now in service in the Bell System. They average 150 feet or more in length. Simple arithmetic tells us that any substantial increase in the average life of a drop wire means a good many thousand fewer drops to be replaced each year.

Moreover, deterioration may eventually mean failure of the service: a customer's line out of order, a repairman's visit. If the past five years had not seen such improvement in drop wires and in block wires (serving a somewhat similar purpose under like conditions), there would have been about 500,000 more cases of "trouble" last year.

Better service for the customer and economy of plant go hand in hand here.

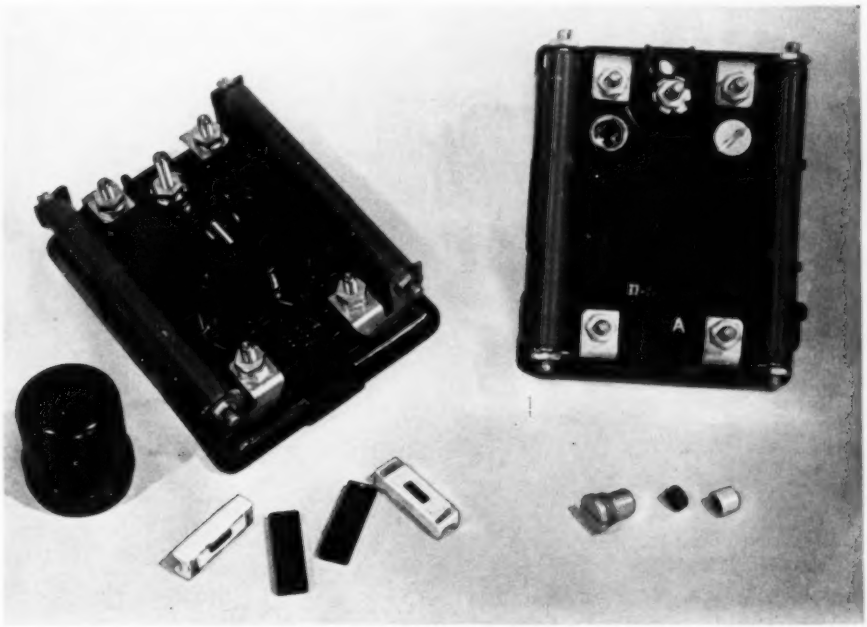
Protectors

SERVICE is brought to about two-thirds of the Bell System's telephones over aerial cable or open wire. Each of these installations includes a station protector, so called, the purpose of which is to protect the inside wiring and equipment from high currents or from excessive voltages from lightning, accidental contact with light and power circuits, or other causes. The protector consists essentially of two pairs of hard carbon blocks and two wire fuses.

Each pair of carbon blocks has between them a small air gap—about three one-thousandths of an inch. Normal telephone-line voltages cannot jump this gap, and so follow their usual circuits. But abnormally high voltage has no difficulty in jumping this gap and following a clear path to ground—putting the line temporarily out of service, but saving the equipment from harm.

Now, dust can get into this tiny gap; and dust plus some conditions of humidity occasionally combine to permit leakage of telephone current across the gap—and then the line is "in trouble." Introduced in trial quantities in 1947 and now being installed in substantial numbers, a pair of small cylindrical carbon pellets enclosed in a little capsule is replacing the rectangular carbon blocks—and is reducing the troubles due to dust and moisture by as much as 90 percent where high humidity prevails for long periods.

The fuses, of the cartridge type, consist of fuse wire in a fibre tube. The wire "opens"—melts—when a current well above the normal amperage passes through the fuse for any substantial length of time. Ordinary lead wire was used originally, but it frequently opened in response to changes in temperature and humidity. And again the line was "in trouble" unnecessarily. Long research and extensive field trial produced a



The earlier type of station protector, shown at the left, was equipped with rectangular carbon blocks (foreground) placed in the center of the base and enclosed in a plastic cover. The latest type of protector, at the right, employs much smaller cylindrical carbon pellets (foreground) enclosed in a metal capsule

fuse wire—an alloy of lead, antimony, and zinc—which is far less likely to cause needless service interruptions and yet has the desired electrical characteristics.

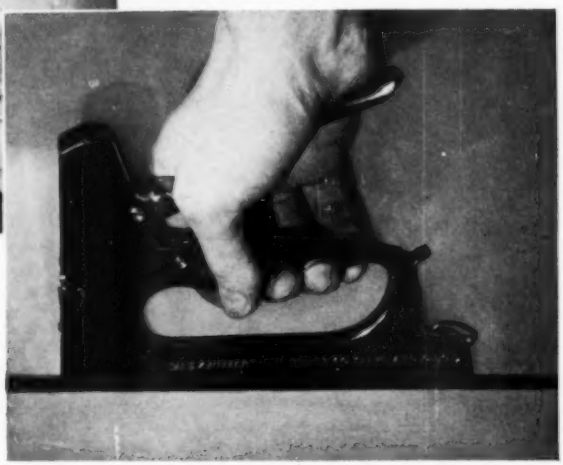
Neither of these troubles would be likely to happen to a particular protector installation very many times—if ever. But with between twenty and twenty-five million protectors in service, even a small percentage could cause annoyance to a good many subscribers and send a good many repairmen to investigate the situation and fix the trouble. The newer designs are reducing substantially the number of both troubles.

Inside Wiring

THE WIRE PATH between the protector and the telephone is commonly known as inside wiring, and for many years has consisted of two-conductor or three-conductor twisted wires. While these have always been installed as inconspicuously as possible,* their average life has not been long, for they are frequently ripped out, after the telephone has been removed, either in the process of redecorating or for some other reason. The resulting loss is not only the wire but the cost of installing it. And since there are millions of such occurrences in the course of a year, the loss aggregates millions of dollars.

For the last few years, increasing use has been made of a smooth jacketed wire which not only looks better but which can be applied to baseboards, walls, and other surfaces with a hand-operated stapling machine. This combination provides a more permanent as well as a more

* Except when raceways within the structure provide concealment for the wires.



The installer is using a hand stapling machine to fasten jacketed inside wiring

attractive wiring installation, and it is much more likely to be left in place when the telephone is disconnected. The Bell System normally uses 800,000,000 conductor feet of inside wire in a year, and currently about half of it is of this jacketed type. What this use of stronger wire and the tendency to leave it in place mean in savings of wire and labor is self-evident.

On top of those advantages, the stronger wire and the tougher plastic jacket give the installation increased mechanical strength and reduce wire troubles. The reduction in troubles due to this new type of wire and new method of attaching can be expressed thus: a "trouble" rate in 1950 equivalent to the 1947 rate would have meant about 600,000 more cases than actually occurred last year of service failure and of consequent visits by repairmen.

Transmitter and Receiver

THE GATEWAYS through which the subscribers' voices enter and leave the telephone network are the transmitter and the receiver. The transmitter has been described as the valve which regulates the waves of electricity in accordance with the pattern of the sound waves set in motion by the speaker's voice. The operation of the standard transmitter depends on the variations in resistance of a path through carbon granules with changes in pressure between the granules influenced by the sound waves on the transmitter diaphragm. These varying electrical currents proceed along the telephone wires until they reach the receiver at the other end of the telephone hook-up. Here the situation is reversed. The varying currents from the telephone line affect the attracting force of the receiver magnets, causing a diaphragm to vibrate and become an electric mouth uttering sounds corresponding to those of the speaker's voice at the other end of the line. If either the transmitter or receiver gets out of order, the rest of the telephone system is not of much use.

Through design improvements in the size and shape of the transmitter chamber containing the carbon granules, in the physical characteristics of the carbon granules themselves, in the material used in the cores and permanent magnet and diaphragm of the receiver, and in other ways, the trouble rate for these instruments has been brought down to about one-sixth of what it was 15 or 20 years ago. The magnitude of the improvement in telephone service from this single cause may be calculated without any great difficulty when it is known that, despite so great a reduction, the number of "troubles" involving transmitters and receivers is still more than 350,000 a year.

Telephone Cords

THE PART of the telephone which ordinarily gets the hardest usage, and therefore requires the most frequent replacement, is the telephone cord. With the twisting, squeezing in doors and drawers, "doodling" when telephoning, chewing by household pets, and other manhandling which it receives, the cotton-covered cord seldom lived to a ripe old age. Careful laboratory study, life tests, and field trials have shown that telephone cords covered with a neoprene jacket

will last several years longer than those with the textile covering. Today a very large majority of telephones being installed are equipped with the neoprene-jacketed cords, and over 80 percent of the 9,000,000 cords used annually for maintenance are also of this type.

About half the 70,000,000 cords in service are now of the neoprene-jacketed type. Due in large part to this, the cord trouble rate has decreased about 40 percent in the last five years. Also, the neoprene-jacketed cord is significantly more kink-resistant than the textile-covered one, and this eliminates the desire of subscribers to place "anti-kinking" devices on the cords. Many of these devices are causes of excessive cord wear and consequent troubles.

Contact Surfaces

IN THE DESIGN of the telephone set —as in many other parts of the plant —it was found desirable to use precious metal on the dial and switchhook contacts, which act as switches in opening and closing the electrical circuits. It developed, however, that no matter what material was used and how much effort was spent in keeping these contacts clean, a stray piece of lint or other foreign substance falling between the two contacting surfaces would prevent the circuit from closing and either put the telephone out of service temporarily or seriously interfere with its use.

The answer turned out to be "twin" contacts. A double set of precious metal contacts is provided at each switching point in the set; and, since there is very much less probability of both contacts being affected simultaneously, this relatively simple expedient has had a marked effect on improved service and naturally has resulted in fewer visits by repairmen.

Coördination of Central Office and Station Performance

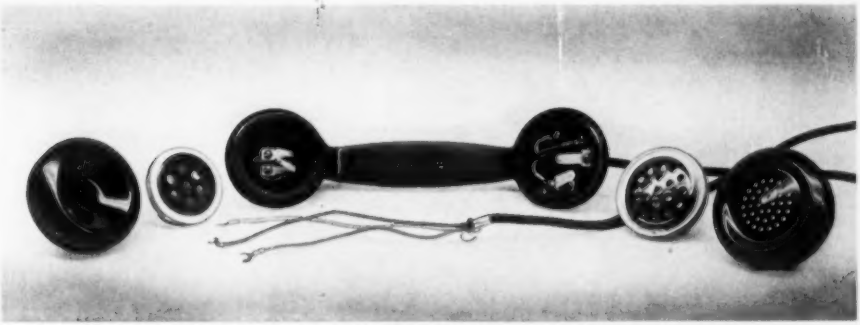
THE IMPORTANCE of coördinating the design and operation of all elements of telephone plant, existing and new, into a harmoniously operating system was emphasized earlier in this article. This is very well illustrated in the case of dialing.

Each click of the telephone dial, as it spins back to its starting position, sends a pulse of current through some electromagnet in the central office equipment. The ability of central office dial equipment to receive the impulses from the telephone dial has been improved and extended, with impressive results. Twenty years ago, for instance, approximately one-third of all dial service troubles were attributable to telephone dials which were either too fast or too slow for the central office switches. In 1948 —to take a recent year—only about seven percent of the dial troubles were associated with the speed of the telephone dial.

There are about 25,000,000 dial-equipped telephones in the Bell System. If this one aspect of dial service had not been thus improved, it would account for an estimated 100,000 more troubles a year.

THE LIST could be continued, but the principle would be the same.

Not all the telephones in the Bell System are of the same type or the same vintage or the same method of



Here are the principal parts of the telephone hand set: receiver cap, receiver unit, handle, transmitter unit, transmitter cap, and cord

operation. But there are unifying standards which not only enable them to operate together but permit the application throughout the System of improvements which come from constant research, development, and test. And, as has been here demonstrated, even the "littlest" improvement can add up to big and important totals in terms of Bell System use.

The savings have been and are tremendously important. In view of the economic trend of recent decades, the "what might have been" without them is difficult to imagine.

The improvement in customers' service over the years is no less important, even though it seldom seems spectacular to the user. It is, nonetheless, proof of the System's policy of constant improvement.

What it all adds up to is another aspect of the job of giving the people of this country, come what may, the most economical as well as the best telephone service in the world.

Over forty-three million telephones now serve the people of the United States—double the number before World War II and 15 million more than five years ago. This enormous gain plainly shows the increasing part the telephone plays in our national life. It also demonstrates the conspicuous success of the telephone industry in furnishing good service at reasonable prices. In the performance of the industry as a whole, thousands of independently owned companies and systems operate nearly eight million telephones and make possible nationwide service through interconnection with Bell System lines. The continuing coöperation between the Independent organizations and the Bell Companies has been essential to the record of rapid growth and steady improvement.

From the A. T. & T. Annual Report for 1950

Associated Companies' Trend Surveys of Customer Opinion Tell Them Where They Stand With Customers, and Add Up to An Over-All Picture for the Bell System

Seeing Ourselves as Others See Us

C. Theodore Smith

Opinion surveys have been used in the Bell System for a good many years to help in the solution of service, market, and public relations problems. This article is a progress report on one of the newer uses of the opinion survey: to measure trends of customer opinion. It deals with the methods followed in these trend surveys, the kinds of information obtained, and some of the ways in which the information is put to practical use.

THE ASSOCIATED COMPANIES are now conducting opinion surveys twice each year, in the Spring and in the Fall, to find out how they stand with their customers. In the latest one, which they carried out this Spring, they obtained the opinions of more than 55,000 residence customers in about 750 of the communities they serve.

The sample of customers in each Company's territory, selected on the basis of accepted sampling procedures, is a cross-section of all residence customers served by the Company. People from all economic groups, those with dial service and manual service, and those with one-, two-, and four-party service, are represented in the samples, as are people from large cities, medium-sized places, and small towns. All these add together to give a picture of the Bell System as a whole.

The principal objective of these periodic surveys is to get factual information about what subscribers think of the quality of service, the cost of service, and the Telephone Company generally. Customers express their opinions by answering such questions as:

Is there anything about your service that is in any way unsatisfactory?

Do you feel that you get your money's worth out of your telephone?

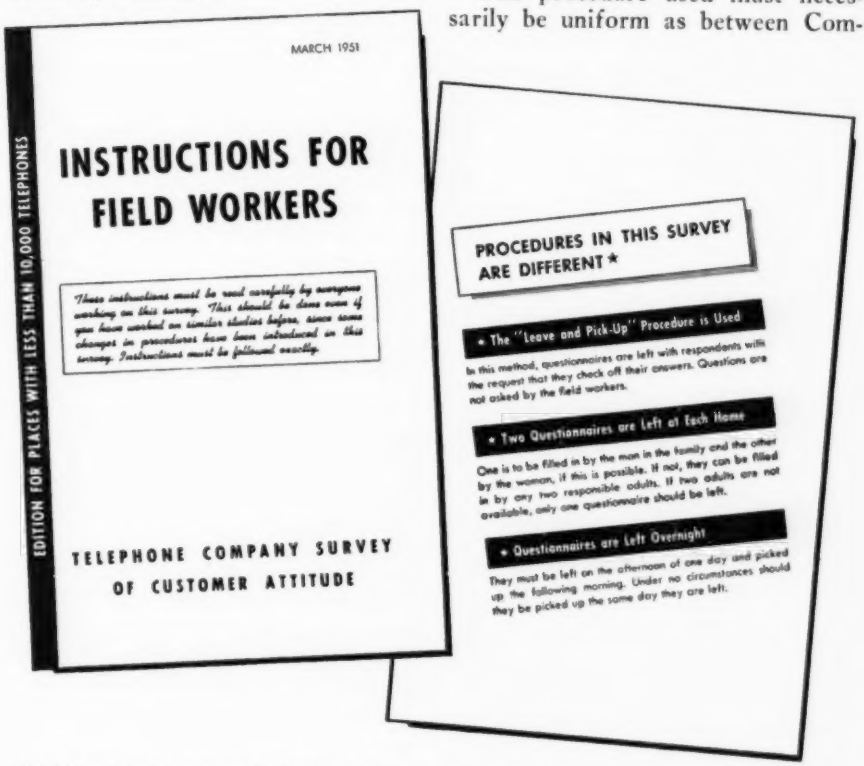
What reputation do you feel the Telephone Company has in your community?

They disclose, too, something about themselves: how long they have had service at their present address, how much they use the telephone, whether they use a telephone at a place of business, and whether they have friends who work for the Telephone Company. And they also give information on the extent to which they recall having seen telephone advertising in different media and on different subjects.*

* Because of limitations of space, it has not been possible to cover specifically material on advertising in this article.

The first experimental trend study was made in 1946 by the A. T. and T. Company, and was based on a System-wide cross-section of about 5,000 customers. No attempt was made to obtain results for individual Associated Companies. In succeeding studies, many of the Companies supplemented the Bell System sample in order to obtain representative results for their own territories. Since 1949, the Companies have been conducting their own trend surveys, with samples ranging from about 2,000 customers to considerably more in some of the Companies with Area or State organizations.

The procedure used must necessarily be uniform as between Com-

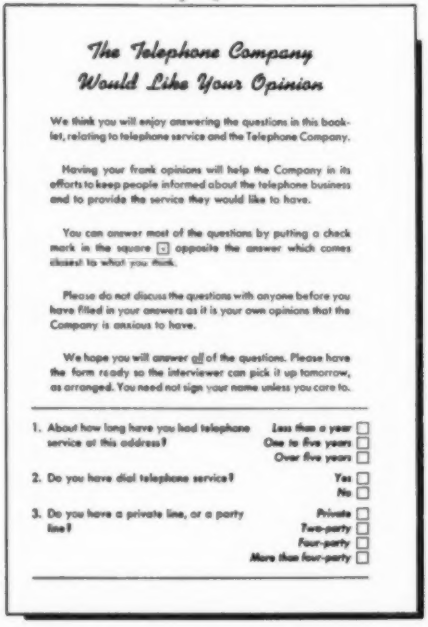

MARCH 1951
EDITION FOR PLACES WITH LESS THAN 10,000 TELEPHONES
INSTRUCTIONS FOR FIELD WORKERS
These instructions must be read carefully by everyone working on this survey. This should be done even if you have worked on similar studies before, since some changes in procedures have been introduced on this survey. Instructions must be followed exactly.
TELEPHONE COMPANY SURVEY OF CUSTOMER ATTITUDE
PROCEDURES IN THIS SURVEY ARE DIFFERENT ★
★ The "Leave and Pick-Up" Procedure is Used
In this method, questionnaires are left with respondents with the request that they check off their answers. Questions are not asked by the field workers.
★ Two Questionnaires are Left at Each Home
One is to be filled in by the man in the family and the other by the woman, if this is possible. If not, they can be filled in by any two responsible adults. If two adults are not available, only one questionnaire should be left.
★ Questionnaires are Left Overnight
They must be left on the afternoon of one day and picked up the following morning. Under no circumstances should they be picked up the same day they are left.

Field workers are supplied with a booklet describing the procedure to be followed

panies and in successive studies, so that the trends will be meaningful for each Company and for the Bell System. To this end, a manual covering the various steps of survey procedure was prepared, and is used by the Companies in conducting the surveys.

How the Information Is Obtained

IN THESE SURVEYS, the Associated Companies obtain their information by the use of printed questionnaires. These are left with customers at their homes by field workers, with the request that they be filled in and left outside the door so they can be picked up. Questionnaires usually are left in the afternoon of one day and picked up the morning of the next.



The Telephone Company Would Like Your Opinion

We think you will enjoy answering the questions in this booklet, relating to telephone service and the Telephone Company.

Having your frank opinions will help the Company in its efforts to keep people informed about the telephone business and to provide the service they would like to have.

You can answer most of the questions by putting a check mark in the square ☐ opposite the answer which comes closest to what you think.

Please do not discuss the questions with anyone before you have filled in your answers as it is your own opinions that the Company is anxious to have.

We hope you will answer all of the questions. Please have the form ready so the interviewer can pick it up tomorrow, as arranged. You need not sign your name unless you care to.

1. About how long have you had telephone service at this address? — Less than a year ☐ One to five years ☐ Over five years ☐
2. Do you have dial telephone service? — Yes ☐ No ☐
3. Do you have a private line, or a party line? — Private ☐ Two-party ☐ Four-party ☐ More than four-party ☐

This is the first page of the questionnaire the field worker leaves with customers

This "leave-and-pick-up" procedure was adopted after considerable experimentation to develop a dependable and economical method of gathering opinion information on a trend basis where hundreds of widely scattered places and hundreds of different field workers would be involved. The field workers do not ask questions and record responses; their main functions are to enlist customers' coöperation in filling out questionnaires and to pick up the questionnaires when completed. While this calls for people who will make a good impression on customers, the job does not require extensive training of field personnel and can be carried out largely on the basis of written instructions.

It has been the practice, wherever possible, to leave two questionnaires at a home. Normally, the initial contact is made with the housewife, who is asked to fill in one of the questionnaires herself and to get her husband or some other responsible adult member of the family to fill in another one. In this way, both the man and the woman are given an opportunity to express their own individual opinions—and analyses reveal that adult members of the same family frequently have different ideas on telephone matters.

AS HAS BEEN the experience in other Bell System opinion studies, customers react favorably to being asked their opinions. Limited checks have been made from time to time, in which people have been asked whether they think this kind of survey is a good idea or not. Almost nine out of ten favor it.

Occasionally, customers write in

comments about the survey in the questionnaire. Typical are the following:

"Happy to see you take the trouble to find out my opinion."

"I think this survey is a very good idea. You then know just how your telephone users feel and what improvements are needed most to satisfy them."

"This type of survey should be repeated from time to time to keep the company in touch with the public."

Unfavorable comments for the most part have to do with some specific feature of the study: a question which the customer found difficult to answer, not leaving the questionnaire for a longer time, and so on. One husband wrote: "Please don't leave questionnaires at my house—as my wife insisted I complete as per your request."

AS IN THE CASE of most opinion surveys, these trend studies are conducted on a sampling basis. That is, a sample of customers is selected in such a way as to provide a cross-section of all Bell System urban residence customers. This involves picking listings from telephone directories in a systematic way which gives every listing an opportunity of being selected. The addresses for these listings (referred to as "key addresses") are turned over to the field workers and serve as starting points for specified routes which are to be followed in making contacts.

Of course, the customers who will be called on along the route starting from any one of the selected "key addresses" are not intended to be

FIELD REPORT – TELEPHONE COMPANY SURVEY

(List every address where contact is attempted)

Indiana — Company; Pinesville — Town; Cedar — Central Office

Attempt No.	STREET ADDRESS: No.	STREET ADDRESS: Street	LEAVING QUESTIONNAIRES: Number Left	LEAVING QUESTIONNAIRES: If None or Only One Left, GIVE REASON*	PICKING UP QUESTIONNAIRES: Number Picked Up	PICKING UP QUESTIONNAIRES: If Any Left Are Not Picked Up, GIVE REASON*
1	137	Prospect	2		2	
2	151		0	N.H.	0	
3	149		2		1	B
4	145		1	Husband Away	1	
5	141		2			
6	10	Adams Ave	2			
7	16	" "	0			
8	20	" "	2			
9	24	" "				
10						

(Use Reverse Side)

* Use following symbols where appropriate; write in other reasons:
NH – No one at home; B – "Too busy," guests, sickness, etc.
NT – Not a telephone home; NI – "Not interested," "Can't be bothered," etc.
NRP – No responsible party

An example of entries on a field report card

representative of all customers in the town or even in the general area of the key address. But by combining all of the groups thus covered in a Company's territory (or State or Area) it is possible to obtain a representative cross-section. As a check on this, the distribution of customers in the sample by type and grade of service is compared with the distribution of all customers in the territory each time a survey is made.

The field workers are employees of outside research firms specializing in market and opinion surveys.* Before starting on their assignments, field workers are instructed to get in touch with the local telephone company managers whose territories are involved, to tell them when and where they will be working. If questions come up during a contact with a customer, the field worker explains that she is not a regular employee of

* One Company in recent surveys has been using its own people.

the Telephone Company, and suggests that the customer get in touch with the local Business Office.

Each of the workers is given an instruction booklet which covers in detail the procedures to be followed. Field report cards are provided on which a complete record is kept of every attempt to obtain a filled-in questionnaire. This provides a basis for determining how many contacts are made, how many questionnaires are left, reasons why they are not left or not picked up, and so on. In some localities it may not be possible for the field people to follow the specified route exactly. The field report cards provide a means of determining the extent to which deviations from the prescribed route have occurred and, through field inspections or in discussions with the workers, to determine the causes.

THE completed questionnaires are returned by the research agency to each of the Companies, where they are reviewed for completeness. The responses are then coded and punched on tabulating cards—one card for each questionnaire.* The statistical results of the study are obtained by mechanically sorting and counting the cards representing the completed questionnaires. From this information each Company completes its own report on customer opinion in its territory. Emphasis is on relative results: changes from one time to another, from one place to another, from one group to another.

The results, along with a representative sample of the tabulating cards, are also forwarded to the A. T. and T. Company. Here the material is consolidated into System totals, the data are analyzed from the over-all System viewpoint, and a report is prepared for general distribution. Here, too, emphasis is placed on relative results.

* In reviewing questionnaires, a close watch is kept for cases where customers have written in comments or made requests which clearly call for some individual follow-up on the part of the Company.

What the Bell System Learns From these Surveys

THE BETTER the public understand the Bell System and the more they like it, the more efficiently and economically can the business operate. In such a business, where good service depends so much on public understanding and coöperation, good-will is of more than usual importance. From the results of these opinion surveys, the System learns how its good-will account stands and finds out whether its balance is going up or down.

Here are some of the things revealed by survey results:

HOW CUSTOMERS FEEL ABOUT SERVICE IN GENERAL

Just as our service indexes and other operating measurements tell us how good the telephone service is from a technical viewpoint, the surveys give information on how good service is as the customer sees it. Because all the Associated Companies conduct the studies, such information is available about people living in different parts of the country and in communities of various sizes; about people with different kinds of service —dial and manual, one-, two-, and four-party; about people who have had service for different lengths of time; and about other groups.

WHAT SPECIFIC TROUBLES CUSTOMERS HAVE WITH SERVICE

In connection with certain of the questions included in the questionnaire, space is provided so that customers who feel their service is unsatisfactory can write in their comments and suggestions. Illustrative of the wide range of comments are the following:

"Children of the other party on the line play with the phone."
"Occasionally it takes quite a while to get the operator."
"They sometimes take too long to fix our line when it is in trouble."
"Clarify long distance bill; symbols sometimes confusing."
"Print in the telephone books is too faint and too fine."

This information, when properly summarized, gives the Companies a pretty clear indication of the things people like and do not like about their service.

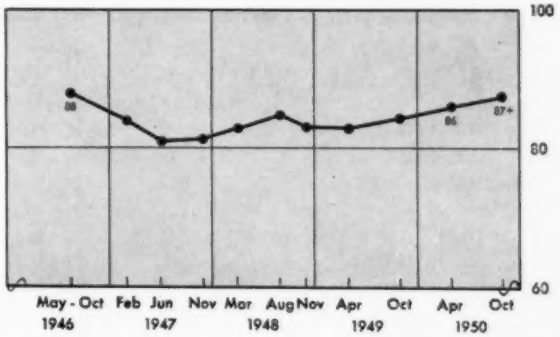
WHAT THE CUSTOMERS' STANDARDS ARE IN JUDGING SERVICE

The standards by which customers judge telephone service are by no means constant. They can and do vary from place to place, from time to time and from different groups of customers. Through World War II, for example, attitude toward service continued to be quite favorable despite unavoidable declines in service quality as reflected in the Company's technical service measurements. Further evidence that customer standards vary is the fact that individual-line customers complain of traffic service almost twice as often as do party-line customers served by the same central offices; this despite the fact that both are served by the same equipment or operators.

HOW CUSTOMERS FEEL ABOUT SERVICE NOT NOW COVERED BY TECHNICAL MEASUREMENTS

The operating departments' service measurements are made on a regularly scheduled basis in a great many of the cities and towns served by the Bell System; to cover all of these regularly would obviously be impractical. In the opinion trend studies, all types of localities are sampled each time a survey is made. The results, therefore, provide the Companies with considerable information as to how people feel about service in localities not covered regularly by the technical measurements.

Even in localities where service measurements are made on a regular basis, there are many aspects of that service which are not covered. These



The service attitude index reflects customer opinion of telephone service

include, for example, such things as the frequency of occurrence of various types of party-line difficulties; certain features of incoming service —calls in error, ringing troubles, no one on the line, etc.; various types of transmission difficulties on local calls; condition and operation of the telephone instrument on the customer's premises; and difficulties with abbreviations on toll bills. The extent to which customers in the surveys mention such things, or fail to mention them, provides information on these unmeasured phases of service.

HOW CUSTOMERS FEEL ABOUT "OVERTONES" OF SERVICE

Perhaps one of the most important values of these studies is the evidence they provide of the effect of friendly and courteous service on customers' attitudes. Most customers feel that they are "always" or "usually" treated in the way they like to be treated by telephone people; and those who do feel that way —as compared with those who do not—are much more favorable toward service in general, toward the cost and value of service, and toward the company generally. Attesting further to the good impression created by friendly and courteous service are the many comments, such as the following, which people write in on their questionnaires:

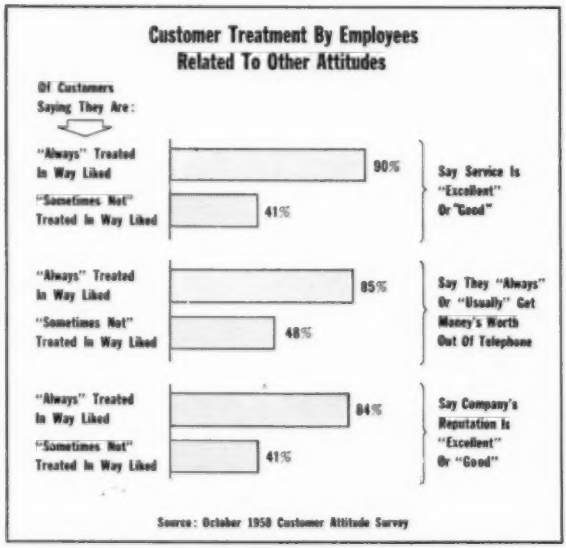
"I like the long distance service I receive—operator is friendly, courteous, helpful."

"The courtesy extended by the business office is remarkable; it is always a pleasure to call about a mistake."

"Your service and cooperation during the hurricanes of '38 and '44 was positively amazing."

"Pleased with service and impressed with courtesy of your service men both in home and on highways."

"Prompt and courteous attention during service in Armed Forces at various locations in U. S."



There is a marked relationship between friendly, courteous service and a good opinion of the Company

HOW CUSTOMERS FEEL ABOUT THE VALUE OF SERVICE

These trend studies also provide the Com-

panies with a means for keeping in touch with public sentiment regarding the value and cost of telephone service. Questions are included in the questionnaire to find out whether people feel that rates are reasonable and that the Company is doing all it can to keep down the cost of telephone service. Answers to other questions indicate whether people feel they get their money's worth out of the telephone, whether they consider it a necessity or mainly a convenience, and whether they are thinking of doing without their telephone.

HOW CUSTOMERS FEEL ABOUT THE COMPANY GENERALLY

The public judges the telephone business not only with respect to the quality and cost of telephone service but also on the Company's standing as a citizen of the community. In each survey, information is obtained as to what people think the Company's reputation is in the community, and about how well they think it is run, how well it treats employees, and how much it does to keep people informed about the business.

AN ADDITIONAL ADVANTAGE of these continuing studies is that they provide a vehicle for asking questions on special problems which may be of concern at the time a survey is made. So far, these additional questions have covered many different fields. They have been designed, for example, to find out how people feel about the job being done in meeting the demand for telephone service, how much they think they as customers benefit from telephone research, how much they know about the organization of the Bell System, what they consider the most important values and uses of telephone service, and many other subjects.

Indexes of Customer Attitude

THE INFORMATION developed in these studies has been used in constructing "indexes" of customer attitude. These provide over-all measures of attitude toward (1) the quality of service, (2) the cost of service, and (3) the Company generally. As has been true with the various operating indexes used in the System, revisions in these attitude indexes undoubtedly will be found desirable from time to time as more experience is gained in their use.

Each of the three major attitude indexes is based on responses customers give to a group of four or five questions. Early experience in Bell System opinion studies indicated that, to obtain a dependable measure of any of these basic attitudes, one question was not enough; several were necessary. These questions, taken together, constitute a "test" of the attitude of the individual, in much the same way that a series of examples can be used to test a person's ability in arithmetic. Obviously, the questions used as a basis of each index must have a common thread of meaning. They must give the customer an opportunity to express his opinion on the subject from a number of different angles. Some of the questions must be relatively "easy" to answer favorably, otherwise everyone is likely to get a low rating; and there must also be some questions which are hard to answer favorably, otherwise everyone would get a high rating.

Reports are prepared by the Companies showing results of the trend surveys

It should be emphasized that the attitude indexes based on the results of these surveys are not a measure of the job of any one department, group, or person. They show in relative numerical terms how the Company stands with its customers. That standing is the result of many things: of how good a job it does in supplying service when and where it is needed and at a reasonable cost, and of its efforts to render an accurate and pleasing service from day to day. It can be affected by off-the-job contacts of telephone people as well as on-the-job contacts. Things done to keep people informed on telephone matters and to build public understanding and good will can have an influence, as can also events outside the business entirely.

How Survey Results Are Put to Use

BECAUSE everyone in the telephone business has a hand, directly or indirectly, in shaping the public's attitude, the findings of the trend surveys receive rather wide distribution. Management and supervisory people see reports of results—and in a good many of the Companies they are circulated through division and district level in certain departments. Findings are frequently presented in both Bell System and Associated Company conferences of operating or public relations people. The surveys also provide material for the consideration of interdepartmental public relations and personnel committees, where such committees operate.

In some instances, first-line supervisors and non-supervisory people receive the findings through special reports, supervisory bulletins, or articles in employee magazines. More and more, the survey findings are being presented to these people—especially those whose duties involve contacts with the public—in group meetings so that they may be more fully interpreted and discussed.

HOW ARE the survey findings put to practical use to help in improving the customer's service or in increasing his understanding of service problems? This, of course, depends in large measure on what the results show; and the way in which they are used will vary, therefore, from period to period and from Company to Company. Here are some of the ways in which some or all of the Companies are finding the results of help:

- In pointing out those aspects of day-to-day service customers receive which offer opportunities for improvement.
- In spotting localities where service appears to be unsatisfactory; and in suggesting remedial action or the need for technical measurements as a further check on the survey results.
- In determining the effect on customer attitude of service improvement programs, changes in operating practices, rates, etc.
- In orienting and training contact employees—pointing out such things as the need for adequate explanations, for accuracy, and the great importance of friendly, courteous service.
- As an aid in estimating the demand for better grades of service and in appraising the party line situation generally.

In suggesting opportunities for improvement in billing—to increase the clarity and accuracy of bills rendered customers.

In bringing to light the subjects it might be desirable to stress in various public relations activities, and in suggesting the best ways to present these subjects to the public.

In deciding on where and when public relations activities such as open houses, lectures and demonstrations, film showings, etc., should be held.

In evaluating the public relations aspects of broad programs of service improvement and expansion.

ALL OF THE Companies with State or Area organizations now have results available for these parts of their territories. (In a few instances, it is necessary to combine data from two successive surveys in order to obtain sufficiently large samples for this purpose.) In a number of Companies the trend survey questionnaire and procedures have been used as a means for getting opinions of customers in specific cities and even in individual central-office areas. The figures developed in this way—particularly when compared with those already available for the Company as a whole, or for a State or for a group of cities of similar size—are proving particularly useful in helping to evaluate operating or public relations problems peculiar to a given locality.

In applying any new technique for measuring opinions, problems of method are constantly being encountered—and this has been true in the case of the customer attitude trend surveys. All of the Companies are on the alert for such problems and must of necessity devote considerable time to finding solutions for them.

As important as it is to work out these methods problems, it is perhaps even more important at this stage to be sure that full advantage is being taken of the information developed through the surveys. That information holds a golden key to better meeting the needs and desires of customers. And only as the results are put to practical use will it be possible to realize the tremendous potential for good will which the knowledge gained from these studies represents.

The Foundation of the Bell System's Ability to Serve the Nation

Higher Wages, Taxes, and Other Costs Must Be Met by Increased Rates for Service

TODAY, on the heels of the greatest peacetime growth in Bell System history, the nation's defense effort is bringing a new and especially urgent tide of telephone demand. In these critical times, it is essential that the System be able to meet the nation's every need for fast, efficient, dependable telephone service.

The foundation of the System's strength to serve is its financial strength.

The key to its financial strength is sufficient rates.

But telephone rate increases have not been keeping pace with rising costs.

TAKE WAGES, for instance. Wage rates in the Bell System have doubled since 1939. The current annual cost to the Bell telephone companies of the *wage* increases they have made during the war and post-war years is *nearly twice as much* as the additional revenue they have received from *rate* increases in the same period.

And wages are the biggest single item in our cost of doing business. Wages take 63 cents of every dollar we spend for expenses other than taxes—a higher proportion than in most other industries.

So we haven't begun to catch up yet with our higher wage bill, let alone our many other increased expenses.

Taxes, too, have gone way up since before the war. Today they are our second biggest item of expense. Taxes cost the Bell System half a billion dollars last year and they are probably going even higher.

As wages and taxes have risen, so has the cost of nearly everything else we have to buy. Lead is up 228 percent, copper is up 112 percent, building materials 133 percent, paper 105 percent, to mention only a few.

These soaring prices have meant that the plant investment represented by each telephone added since the war has risen, on the average, to $340. The average for all telephones in 1945 was $254.

Compared with the rise in prices of most things, telephone rates have gone up very little—only a few cents per day per telephone. All the rate increases so far granted and pending average less than 25 percent of Bell System revenues. Yet, the price of food has risen 129 percent, clothing 96 percent, house furnishings 108 percent, and autos 93 percent. Telephone rates have gone up less than one-third the rise in the general cost of living—which has risen 78 percent since 1940.

Two-thirds of the more than $4,000,000,000 of new capital the System has raised in the postwar period to meet the nation's telephone needs has had to be obtained in the form of debt (bonds). This has increased the proportion of debt in the System's capital from less than one-third at the end of World War II to about half today. This level of debt is much too high.

THE FACT that debt was low in 1945 made it possible for the Bell Companies to obtain, in a very short time, the enormous amounts of new money they needed to meet unprecedented service demands. The System should be no less well prepared for the future.

Most of the new money that will be needed to meet service demands should come from the issue of stock, either through bond conversions or otherwise. The complete conversion of the convertible debentures outstanding, together with the sale of the balance of shares which may be issued under the Employees' Stock Plan, would reduce the debt in the System's capital structure to about 37 percent. As a long range objective, the proportion of debt should be further reduced.

The ability of the System to do this depends upon the success of the Companies in getting sufficient rates. Applications for increased rates are pending in 28 states and other applications will be filed as the need arises. Rate-making bodies through the years have generally approved rates and earnings that have permitted good service, good wages, and a reasonable return to investors. We are confident that the same good sense and good results will continue to prevail.

The Vision of a Man Named Bell

Commemorating, on the Telephone Hour of March 5, 1951, the Seventy-Fifth Anniversary of the Invention of the Telephone, March 10, 1876

Announcer: On March 10th, 1876, seventy-five years ago, in the attic of the house at 109 Court Street, Boston, a little instrument of wood and wire and metal speaks. It speaks intelligible human words—and the name of the man in that room becomes immortal: Alexander Graham Bell, inventor of the telephone. And now—the vision of this man named Bell, narrated by WALTER HAMPDEN:

How does a man's dream begin? How does it grow?
It begins as a child begins—in simple faith and trust . . .
It wonders—as a child wonders . . . it dares to ask questions of the universe.
It expects answers . . . it finds answers . . .
In the tone of a plucked reed, quivering along a slender wire . . .
In the dance of the molecules across a metal disk . . .
Lifting a bridge of voices—
Across the deep silence of time . . . and space.
This was the dream of a man named Bell.

How does a man's dream grow? It grows as a nation grows—
Eternally leaping the horizons, calling others to follow—
Carrying the word—over mountain and prairie—
From the leather lungs of the ox-team driver—
In the mellow horn of the river boat men—
In the furious hooves of the dispatch rider—
In the roar of the iron rails! . . .
And as a nation grows, so does the need of its people . . .
The need to be close to each other—the hunger for the sound of a voice
Across that reach of time and space . . .
And the need is answered by the dream . . .

MAN

From Boston town to old New York the telephone wires are strung,
And westward to Chicago, the telephone lines are flung!
Across the plains the tall poles go—to link the whole durn nation—
Why, if this keeps up, we soon can talk—to everybody in Cree-ay-shun!

NARRATOR

Listen! Listen to the hum of the wires in the wind—
Across mountain and desert, valley and plain . . . do you hear it?
A nation is talking, a nation is growing—there! Do you hear it?
A voice from Minneapolis—and freight cars roll from Kansas!
A voice from Washington—and ships are loaded at a Western port!
Speak from Detroit—in Pittsburgh the furnaces roar
And the blinding metal races along the golden floor!

How can you measure the vastness of this man's dream?
What dimensions can you put upon it? . . . The answer lies—
Not in the words of tribute paid his memory—
Nor in the cold stone of monuments. His greatness echoes
In every word *you* speak—along the singing wires . . .

YOUNG MAN

Hello, Mom! It's a *boy*, and they're both doing fine!

GIRL

The train was late, but I'm OK, so don't you worry, Mother!

MAN

Ship ten more tons. The Navy needs it by next Tuesday!

WOMAN

Hello, doctor? Our baby's sick! Please won't you come right over!

YOUNG MAN

Yep, this army life ain't half bad—but I miss your good home cookin'!

WOMAN

Hello, Jim, this is your mother. Dad left us . . . just an hour ago.
His last words were of you . . .

NARRATOR

All the words of birth and death—of love and joy—
Of departing and arriving—of buying and selling—
Of asking and answering . . . all your words . . . all
Are the measure of this man's dream—its depth and breadth
Measured by your great need of it! How high its value? Only this.
Were not that dream fulfilled, time and space again
Would rush between us . . . and each would be . . . so much alone!

How does a man's dream begin? It begins as a child begins
In simple faith and wonder . . .
How does a man's dream grow? It grows as a nation grows,
Eternally leaping the horizons, calling others to follow—
And the others caught up in his vision—the builders, the planners,
The lineman against the sky—the girl at her switchboard—
The scientist charting the tides of invisible sound—
The splicer sealing the joints of the cable—
All are the weavers of speech serving the nation in peace and in war
Carrying the word—across the silence of time and of space—
Along the gleaming wires—all the words of love and birth and life—
Throughout all the land—to the farthest village and town—
And beyond the dark seas—and the endless horizons beyond the earth's curve—

This was the vision of a man named Bell—
And we are the inheritors of his dream!

A Social Evolution of Recent Decades Brings a Bell System Program to Meet Service Needs of City People Who Have Flocked to the Suburbs

Metropolitan Service for Suburbanites

Peter A. Dolan, Jr.

Editor's Note: Reversing a trend which had continued for more than a century, a social evolution of the past few decades has brought about a shift in the population away from rather than toward our American cities. Overcrowding alone could not have brought this about; but growing density of population plus improved transportation, the automobile and good roads, and the telephone could—and did. The Bell System has always adapted the form of its services to the changing needs of its customers, and the activities described in the following article, while unique in size and scope, are in general similar to programs which are in operation or planned in many parts of the System.

IN THE GREATEST single cutover in history, involving 3,450,680 telephones, the New York Telephone Company last May introduced its New York Metropolitan Area Service Plan.

New York City, southern Westchester, and Nassau County were joined in a single telephone area. The value and usefulness of service were increased immensely under the plan, which permitted a saving on many telephone bills and provided faster calling by establishing direct dialing between city and suburbs.

The history of this tremendous change in a telephone system goes back approximately twenty years and is intertwined with a social evolution which has altered the character of this great metropolitan area.

For many years the population of New York City has been spilling into the neighboring localities, with much of the flow going to the adjoining counties of Westchester on the north and Nassau on the east. As the suburban communities developed, towns and villages grew closer and their boundaries, in many cases, became mere lines on maps rather than economic or geographic separations. Better roads, bus routes, private automobiles, shopping centers, all drew them together. This new community of interest was reflected in sharp in-

Communication needs of post-war suburban residential developments such as this are met through the introduction of Metropolitan Area service

creases in the volume of toll calling and in many requests for broader local telephone calling areas.

Extended Area Service

HEEDING the desires of thousands of suburban users, the New York Telephone Company in 1936 introduced an optional service—extended-area. Under this arrangement, the customer, at a somewhat higher monthly rental, could obtain a larger toll-free calling area. For some years extended-area service met the requirements of suburbanites who sought wider primary calling areas. However, it was obvious that it was not a complete solution, for no matter how close suburban communities were drawn together by local development, they were tied as strongly to the city as they were to one another. The links of employment, friendships, business and professional acquaintanceships and amusement remained strong, and telephone people foresaw the day when the city and adjacent communities would be treated as a single metropolitan telephone area.

When World War II ended, the dam of the city's boundaries crumbled under the rush for housing. With city land scarce, the veteran in most cases had to leave the city for its environs, where home construction was booming. The migration of hundreds of thousands of residents to the suburbs during the post-war years was the climax of a social change that had started in the 1920s, and was the final touch in the creation of a metropolitan area encompassing New York City, southern Westchester, and Nassau.

A good deal of New York City is visible in this aerial photograph: Manhattan Island in the center, part of Brooklyn at the right, and some of the Bronx at the top

To bring the best service to telephone users in this area, the New York Telephone Company would have to make one of the largest changes ever attempted in any telephone system—and it was ready to do the job. It brought forward its New York Metropolitan Area Service Plan.

Making One Telephone Area

THE PLAN proposed the welding of the entire region into a single telephone area by:

1. Merging 46 suburban exchanges and the New York City exchange into a Metropolitan Exchange.

2. Providing direct dialing between most of the points within the area.

3. Broadening the primary calling areas of suburban subscribers.

4. Replacing toll billing of individual calls within the area with message-unit billing in bulk.

5. Extending the scope of the monthly message-unit allowance to apply on calls throughout the 46 suburban exchanges as well as on New York City calls.

The establishment of extended-area service in 1936 had indicated that telephone thinking was headed towards a metropolitan plan, yet the foundation for the plan was laid as far back as 1930. In that year all of New York City became a single telephone exchange of 15 rate zones, and toll charges within the city were replaced by message-unit charges up to three units for interzone calls.

The zoning system carried within it the origins of the metropolitan plan because it contained the possibility of extending the same system to the adjacent communities without disrupting the rate pattern of the city. In other words, why not divide the suburbs into zones and add them to the city's zones?

As traffic studies through the years

The 15 rate zones of New York City which form the basis of the Metropolitan Plan are shown within the broken lines at the lower left in this illustration—except for zones 14 and 15, representing Staten Island, out of location in the upper right corner. The Westchester and Nassau zones, preceded by the initials W and N respectively, extend to the heavy lines marking the present boundaries of the Metropolitan Plan

showed a large increase in toll calls between suburban communities and between city and suburbs, the company in 1943 began active planning for the setting up of a metropolitan exchange. Committees were formed, analyses were made, and after three years a master plan was approved.

Nine Suburban Rate Zones

FUNDAMENTALLY, it divided southern Westchester and most of Nassau into nine rates zones each, similar to those in New York City, and it proposed a metropolitan exchange to include New York City and those suburban exchanges in Westchester and Nassau within a 25-cent toll range of zone 1 in the city (lower Manhattan).

After two years of further study and refinement, approval of the plan was sought from the New York Public Service Commission in conjunction with the Company's request for higher rates throughout its statewide territory.

However, before the plan had reached its final form, the Company began a program of changing about 40 central-office designations in the city to make room for additional offices and to eliminate the conflict in dialing codes between the city and suburbs. Twenty designations were changed to permit the suburbs to retain designations identical with community names. For instance, MArble 7 in the city was changed to LOrraine 2 because of the conflict with MAnhasset 7—Manhasset being the name of a community in Nassau County.

Most of the changes in central-office designations took place between July, 1947, and February, 1949. Never in the history of the Company had so many designations been changed in so short a period, yet serious complaints were practically negligible.

While hearings on the plan and the rate request were being conducted, a renovation of the system around New York was taking place in preparation for the day that the Commission would give the authorization to proceed. Changes had to be made in every central office—350—in the Metropolitan Area.

Message registration equipment, which automatically clicks off message units, had to be installed in the suburban dial offices and a major tandem addition was required for the handling of rerouted dial traffic. Although most of the central offices in the city had message registration equipment operating for calls whose initial charges were no higher than three message units, additions to the mechanism had to be made to record calls with initial charges of up to five message units. These calls were to be dialed under the metropolitan plan.

WITH suburban primary calling areas scheduled for enlargement, additional trunks were needed to handle the expected rise in the volume of traffic, and manual offices required more "B" switchboard positions.

For approximately one year this work continued, and by January, 1950, the system was physically ready for the change. However, an important question was unanswered—was the customer prepared for the change?

In the newspaper stories released in November, 1948, concurrent with the Company's filing for higher rates, an outline of the plan was included. However, 18 months were to elapse between the filing and the decision, and it could be assumed that the public had very little recollection of a metropolitan plan.

The institution of metropolitan service was dependent upon a favorable order from the State regulatory body. Since the Company schedule called for its introduction immediately, should such an order be obtained, publicity which normally would have been spread over months was to be crammed into a few days.

To fit a great variety of local conditions, 75 versions of a pamphlet describing the plan were prepared, 49 versions of a dial instruction card, 20 versions of rate schedules, 93 versions of a news story, 53 versions of a newspaper advertisement, and 7 variations of a radio spot announcement.

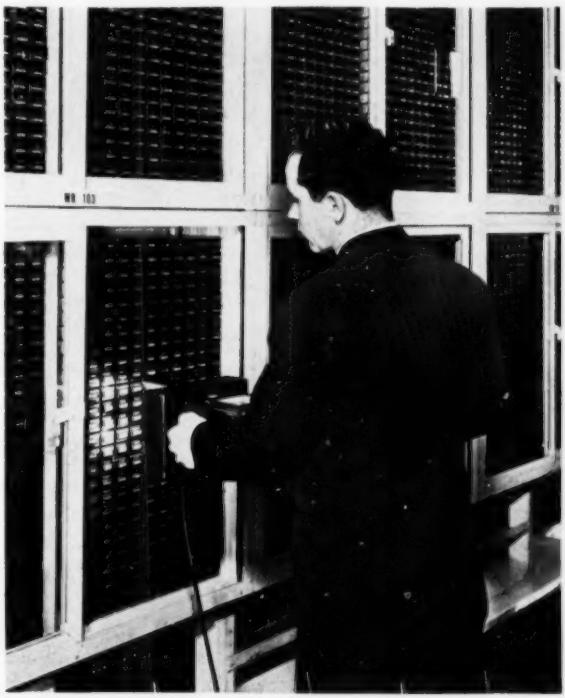
On Wednesday, May 10, 1950, the Commission approved the plan.

Last minute changes were made in the literature. The presses printed night and day. Company trucks shuttled between three printing firms and the company's accounting centers, transporting the reams of material to lines of clerks who mailed their way out of the paper avalanche.

Plant men worked through Saturday night and well into Sunday on the greatest cutover in telephone history. The "cut" involved countless technical changes and the connection of 5,300 trunks and the disconnection of 4,300 to permit the direct dialing of message-unit calls formerly routed through an operator on an A-B toll basis.

All central-office routing and rate material for operators was replaced with new instructions.

At 8 A.M. on Sunday, May 14, the



Photographing message-unit totals of the message registers is the first step in bulk billing of message units

Metropolitan Exchange went into operation.

Customer Acceptance

CUSTOMER ACCEPTANCE of the service was much higher than anticipated. The first returns demonstrated that the public was dialing 80 percent of the calls it should dial directly. Within a short time this percentage had risen to over 90 percent. It had not been expected that the 90 percent figure would be attained until a much later date.

Business office contacts, as foreseen, jumped sharply once the plan got under way. However, the plan was very favorably received, since most of the calls were from customers seeking advice as to the best type of service (message or flat-rate) for their needs, and asking explanations of the extent of their local calling areas. After the receipt of their first bills under the plan, many suburban customers requested information on the details of bulk-billing.

In operation for approximately a year now, the metropolitan plan has brought:

1. Savings to many customers.
2. Faster, simpler, and more uniform service, through the extension of direct dialing.
3. Greatly expanded suburban primary calling areas.
4. Reduced charges on many interzone calls.
5. A telephone service suited to the present needs of a widespread metropolitan area.

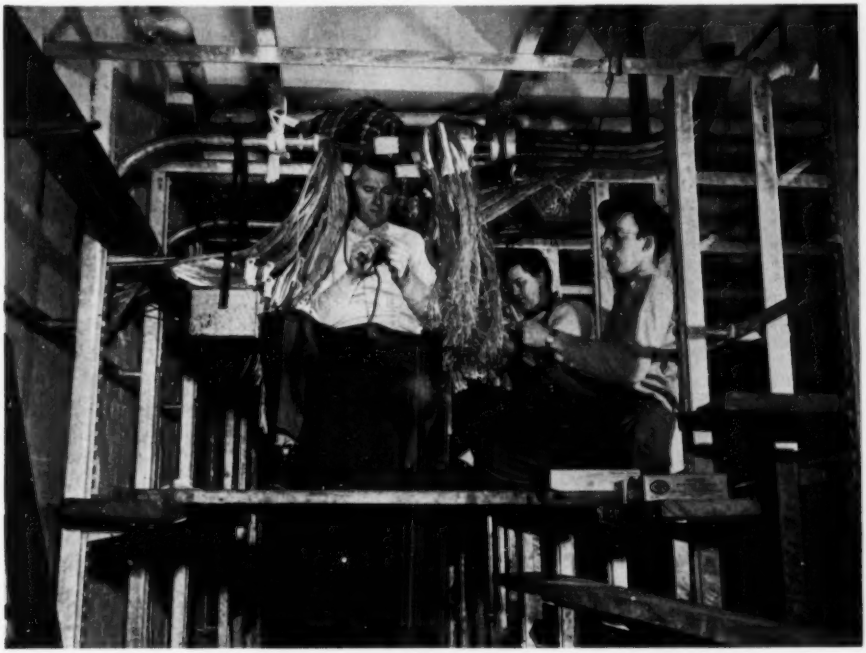
These improvements have added greatly to the value of service. For example, before the plan went into effect city customers were paying toll charges on calls to southern Westchester and Nassau whether or not they had used their basic allowance of message-units. The billing of these calls as message units was very helpful to the message-rate residence customer, for more than half of these customers were not using their full message allowance. The unused portion of the allowance now is applied to suburban calls.

Since the charge for message units exceeding the basic allowance proceeds on a downward sliding scale, many business customers have profited. They now make a number of calls to the suburbs at a lower cost than would have been possible under the previous toll charges.

Message-rate customers in the suburbs enjoy similar advantages on calls to the city or to other points in the metropolitan area, and flat-rate residence customers are able to call and be called without extra charges by more nearby communities.

ON THE COMPANY SIDE of the ledger, the installation costs of the plan amounted to several million dollars. However, the company was able to benefit immediately from some offsetting operating economies which the plan offered, and further savings are expected to accrue. Here are some examples:

Material savings have been possible in the accounting department, primarily because it is much quicker to process message units than it is to process toll tickets. This reduction in work has brought about substantial savings in salaries and wages. The force adjustments required were estimated carefully in advance and



Splicing in a new dial office in Nassau County to permit dialing to the city and to other points in the metropolitan area

were accomplished by reducing the hiring program. As a result, the normal losses from resignations, retirements, etc., produced the necessary reduction in the working force and no employees were laid off.

Similar savings have also been made in operator requirements, since calls formerly ticketed, timed, and completed by the operator now are dialed directly.

Also, in certain buildings savings in office space have permitted the company to install more central office equipment, thereby deferring building additions and line transfers.

Although metropolitan service, as a whole, went into operation as planned, the magnitude and complexity of the change made a few minor equipment and operating irregularities inevitable. On some routes, for example, traffic formerly merged with other tandem calls exceeded the estimates when routed directly, thus requiring an overnight increase in the number of direct trunks between the points affected.

In isolated cases, a sharp rise in the volume of calls to "call indicator" positions necessitated the prompt reengineering of facilities.

Another problem that arose was the tendency of some customers to dial incorrectly the two-word central office designations such as White Plains and Port Washington. Many calls were dialed WP and PW in-

stead of WH and PO. Newspaper advertising and the giving of dialing instructions by the local intercepting operators were used to correct these dialing errors.

However, from the broad point of view, the unexpected difficulties encountered were insignificant—not even comparable to the sand in the spinach.

The endless study of social trends . . . years of planning . . . mountains of detail . . . myriad equipment changes . . . made the New York Metropolitan Area Service Plan a success. But it was hardly in operation befor[illegible] Company engineers were looking into the possibilities of enlarging the new metropolitan exchange.

Taxes on Bell System telephone service in 1950 were about a billion dollars—some $200 million more than in 1949. The effect of the new Federal tax laws recently enacted will be to increase taxes somewhat further in 1951, due mainly to the higher corporation surtax rate. Currently, taxes are running at a rate of well over a billion dollars annually, and are equal to about $2.65 per telephone per month.

Federal excise taxes paid by customers in 1950, and remitted by the Bell Companies to the United States Treasury, came to about $500,000,000. Taxes levied on the Companies (and also borne by telephone users in the last analysis) were $499,451,000. While it is recognized that the nation's over-all tax needs should be shared by all sections of the economy, it is apparent that the users of telephone service are carrying at least their full share of the existing tax load. No service of like necessity carries a like burden.

From the A. T. & T. Annual Report for 1950

Test by Wreck and Storm

AT THIS CRITICAL MOMENT in its history, our country is peculiarly sensitive to evidences of its strength. Among its important physical assets must be counted a telephone service which is big, competent, alert, responsive—able to meet whatever test may come its way and to play its part in the security of the nation.* Recent occurrences which demonstrate how splendidly the men and women of the Bell System, backed by the resources of their nation-wide organization, rise to each challenge are, therefore, of special interest right now.

Two catastrophic railroad wrecks in the New York Metropolitan area, one on Long Island on November 22, 1950, and the other in New Jersey on February 6, 1951, which took a total of 161 lives and injured another 800 passengers, found telephone people prompt to do their parts both as individuals and as members of the Bell System team.

IT WAS on Thanksgiving Eve that two commuter trains, carrying 1,200 and 1,000 passengers, collided near Jamaica, L. I., and became instantly a mass of telescoped and twisted steel. Among the 77 who died were two Bell System people, and others were gravely or less seriously injured. Those who were able stayed in the cars or at the scene and helped those who were more badly hurt until rescue forces arrived.

An installer who lived not far away had gone home for supper and, turning on the radio, heard the first announcement of the crash. He left the table instantly and drove quickly to the headquarters of the police precinct in whose jurisdiction he knew the scene of the wreck lay. There he learned the gravity of the situation and saw police officers returning to headquarters to make oral reports because they had no means of communication at the site of the disaster. After checking the police lines, the installer raced to a Company garage, reported to his foreman by telephone what information he had about the disaster, and loaded a telephone car with telephones and wire. Then he proceeded to the wreck itself.

There he ran a wire to a terminal on a pole in the rear of an adjacent house and, having no time to wait for special central office facilities, asked the subscriber's permission to bridge an emergency telephone on his line. Within minutes the authorities thus had a telephone for their needs in summoning and directing vital help. Said one official, "Here we were figuratively out in the wilderness, needing a phone right there with us more than anything—and there it was; just as though it dropped from nowhere."

Meanwhile, other telephone men reached the scene with loads of equipment and set up additional facilities. Nine more customers released their lines so that emergency telephones could be bridged to them, and six mo-

* See "Bell System Well Prepared for National Emergency," MAGAZINE, Autumn, 1950; and "The Bell System's Number One Job," MAGAZINE, Winter, 1950–51.

bile radio telephones had been rushed to the scene.

When calls to the police first indicated in the central offices concerned that a disaster had occurred, operators immediately notified doctors, nurses, and hospitals in the vicinity. Then, as calls mounted to a flood, employees stayed on beyond normal hours of duty and others off duty came in until, within an hour of the wreck, there were 124 operators at their positions instead of the normal 50. They handled 82,000 calls between 6 P. M. and 11 P. M., in contrast with the usual 48,000.

Doctors, police, and newspaper men are reported in the press to have declared that they had "never seen such efficient service in such a short time."

And in New Jersey

IT WAS less than three months later —on February 6 of this year—that a passenger train left the rails at a temporary trestle and plunged down a steep embankment near Woodbridge, N. J., with resultant great loss of life. Among the 84 who died were six Bell System people.

Here again the pattern was of individual initiative, of effective adaptation of facilities, of organized response to a great need.

The hour was a little earlier, and there were installers and repairmen at work in the vicinity. They hurried to the spot, a scene of horror and confusion, and plunged into rescue efforts and the first-aid work in which all telephone Plant men are trained. At this they were joined by other telephone men who had been on the train but were uninjured.

Flocking to the Rescue

FROM A HOME close to the scene went a call to the local central office giving word of the wreck, and the operators summoned rescue squads and notified the district telephone organization. The central office was only a few blocks away, and sent all its medical supplies and emergency equipment; and a little later still more was brought to the scene from the Company garage. Tarpaulins, emergency lighting equipment, and other heavy-duty material were of great use to rescue crews, and a Company truck was used as an ambulance.

Other men, meanwhile, undertook the difficult and essential task of providing communications for police, medical personnel, the Red Cross, and press agencies. Four telephones in residences nearby were borrowed for emergency use, and given central office priority, within minutes after the wreck. Soon wires were run to provide eleven more telephones at the scene. Still others were provided at the Red Cross emergency center, at the City Hall, and at police headquarters. Within an hour, the new circuits available totaled more than 30, and facilities to nearby communities had likewise been increased.

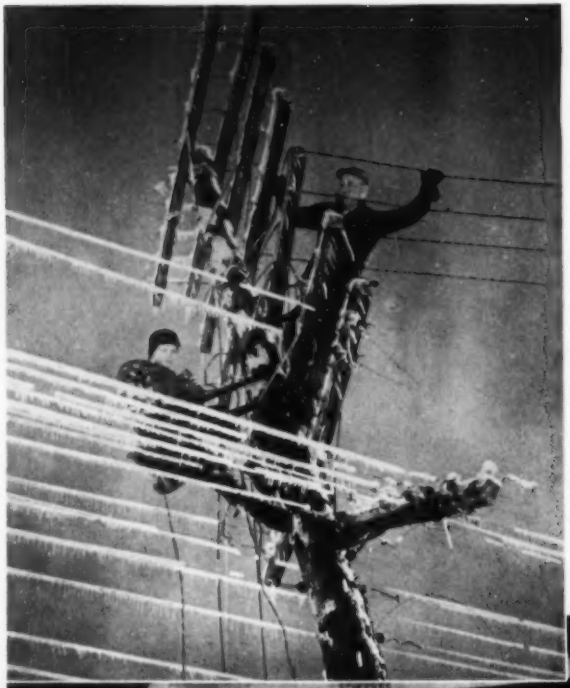
The 18 operators on duty in the Woodbridge central office were quickly joined by others anxious to be of assistance. In the eight-hour period following the wreck, about 150,000 more calls than normal were handled in central offices in the immediate vicinity.

So brief an account omits many aspects of the emergency telephone jobs

A nurse at the scene of the Long Island wreck summons more medical assistance

At the Woodbridge, N. J., Red Cross emergency headquarters, installers connect telephones in a hurry. Three of the four men in the background of this picture are telephone employees

and of the special services telephone people performed under ghastly circumstances. It must give, none the less, some over-all view of men and women who knew what to do in the face of bloody disaster, had the facilities and equipment to do it—and went right ahead and did it!



Winter dealt a heavy blow to large parts of the South

Telephone men, vehicles, and supplies came from long distances to meet the challenge and bring about a speedy restoration of telephone service

Storms Strike the South

A DIFFERENT but not unfamiliar kind of disaster has put the Bell System's capacities and recuperative powers to yet another test this winter; for the season's storms have been so severe as to be almost catastrophic.

The wintry gale which scourged the Northeastern States on last November 25 and 26 was the most violent of its kind ever recorded in that area.* More than 600,000 telephones were silenced, 3,200 toll and long distance circuits were put out of order, 129 central offices were temporarily isolated. And all—with a few exceptions in remote territory—were restored within a week.

That was a forerunner of the storm which struck the Southland before the New Year was more than well started.

For sleet, snow, and wind cut a swathe on January 31 and February 1 and 2 across parts of Texas, Louisiana, Mississippi, Alabama, and Tennessee with a force which left a nightmare in their wake. Sleet and snow are strangers in a good deal of that territory, and behind them they left 6,073 toll circuits out of service; 217 exchanges temporarily isolated, nearly 100,000 telephones "dead."

At once the forces of reconstruction were summoned. Crews were rallied, and were moved about to concentrate their efforts where the need was greatest. The Western Electric Company rushed in the required quantities of telephone plant and equipment and supplies. Distances are great, the lines are long. By the middle of February, half the damage had been repaired; by the end of the month, substantially all. It was a costly blow: an estimated $7,700,000 is needed to make it good.

Return Engagement

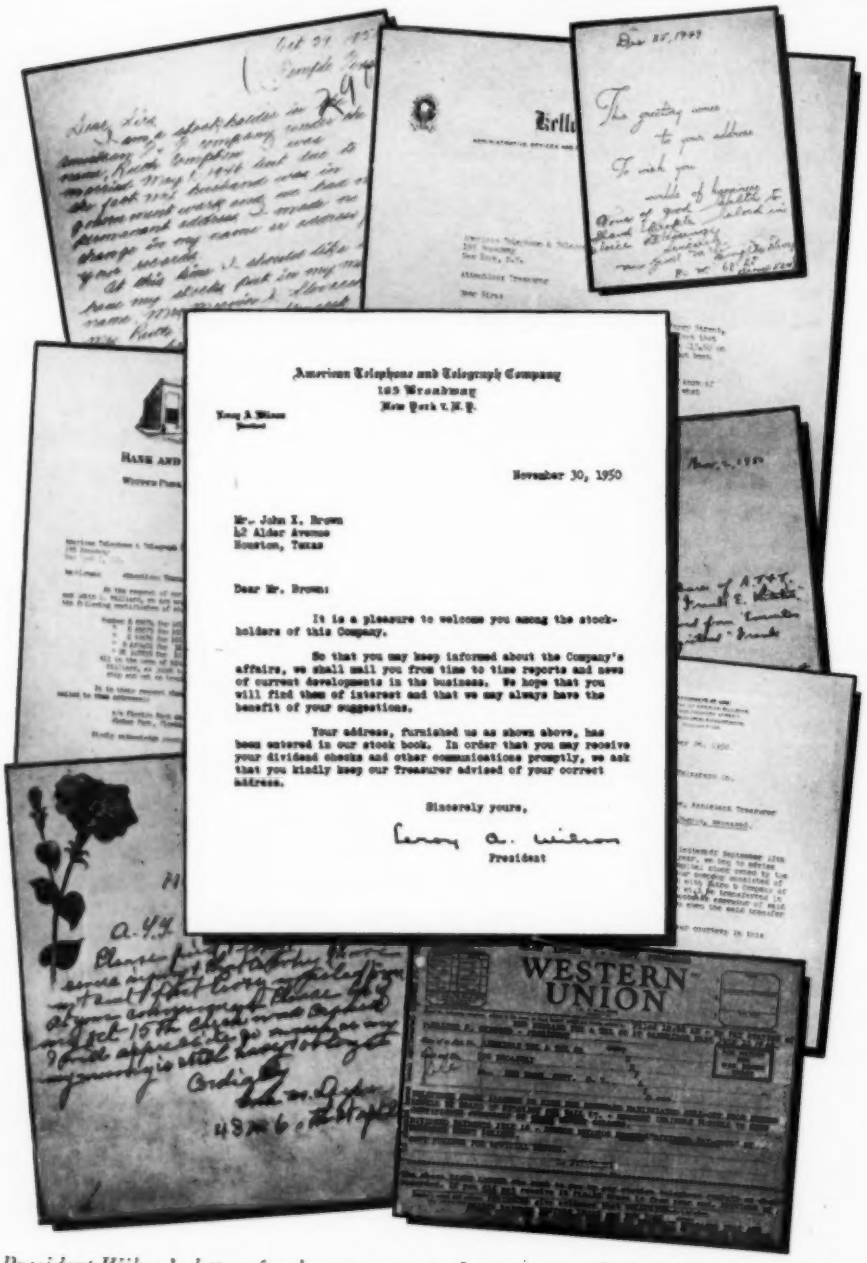
THEN NATURE played a joke—but it wasn't funny. For on February 13 and 14 more freezing rain and sleet came down: down across parts of Oklahoma and Arkansas and Texas; yes, even across part of the damaged area so recently restored to service. The score: 1,500 toll circuits silenced, 83 exchanges temporarily isolated, 6,000 telephones out of order. And again the transferring of repair and construction crews, Western Electric's fast shipment of needed supplies, the dawn-to-dark efforts which brought about restoration here by the end of February—to the tune of nearly a million dollars.

It isn't the damage that is the most important factor here. It is the Bell System's ability to restore it quickly, in stride. (Consider for a moment, as indicative of a certain recuperative power, some typical Western Electric storm emergency shipments through the end of February: 762,500,000 conductor feet of exchange cable; 28,788,000 linear feet of NP drop wire; 20,286 telephone poles.)

It isn't the cost—although it runs into millions—which is the most important factor, either. It is maintaining the System's financial strength, so that such losses cannot cripple it. For it is of utmost importance in these uneasy times that the Bell System's capacity to cope with these and even greater emergencies be unimpaired.

J. S. B.

* See "Bell Companies in the East Withstand Heaviest Blow," MAGAZINE, Winter, 1950–51.



American Telephone and Telegraph Company
195 Broadway
New York 7, N. Y.

November 30, 1950

Mr. John T. Brown
42 Alder Avenue
Houston, Texas

Dear Mr. Brown:

It is a pleasure to welcome you among the stockholders of this Company.

So that you may keep informed about the Company's affairs, we shall mail you from time to time reports and news of current developments in the business. We hope that you will find them of interest and that we may always have the benefit of your suggestions.

Your address, furnished us as shown above, has been entered in our stock book. In order that you may receive your dividend checks and other communications promptly, we ask that you kindly keep our Treasurer advised of your correct address.

Sincerely yours,

President

WESTERN UNION

President Wilson's letter of welcome goes to each new owner of this business. Incoming communications—mail and telephone—average more than 15,000 a month

The Treasury Communications Bureau Handles 750 Special Contacts a Day; Stockholders Write and Call A. T. & T. On a Great Variety of Subjects

Human-Interest Aspects of Stockholder Correspondence

John K. Torbert

"IT IS A PLEASURE to welcome you among the stockholders of this Company." So writes President Leroy A. Wilson of the American Telephone and Telegraph Company in greeting each new owner. And sooner or later there are grateful replies, a typical one adding this touch: "I am aware that this does not read like a business letter, *but it is from a friend.*" On these two brief illustrations may be built a good understanding of the human side of stockholder relations.

Day in and day out, security holders telephone or write the Company, to make comments, requests, or inquiries. Rule One, of course, is to give each communication complete, prompt, and individual attention; and the representative of the Company in these security-holder relations is the Communications Bureau of the A.T.&T. Treasury Department.

There is drama in many of the messages received. Among the letters, we find lengthy ones, pathetic ones, and letters from owners of several hundred shares written on scraps of wrapping paper. There are impulsive letters, explosive letters and —thanks to a gracious providence— humorous letters! There is the occasional crafty letter attempting to pry loose information to which the writer is not entitled. There are civil letters and occasional uncivil ones, most of the latter from that fringe of humanity which finds life a sad affair.

With such a variety of mail, it might seem difficult to find a common denominator that is meaningful. The average stockholder is sometimes thought to be interested only in dividends and the market value of his stock. Experience with stockholder correspondence on a large scale, however, points to other interests that are also important. Most vital of all is the touch of individual human nature which lies in and behind every

contact and which must be recognized and understood if good relations with stockholders are to be enhanced as the owners of the business grow in number.

In a company having now almost a million shareholders, the interest of each stockholder, as reflected in his letters and inquiries, is an important factor in our operations. Moreover, stockholder correspondence is continuously entering new territory, not tied down to precedents, and the force of letter-writers and others in the Communications Bureau have had to learn its inner qualities, its scope, and some of its psychology. They have also learned many of its stimulating rewards.

Specially trained men and women answer incoming telephone calls at a battery of multiple-line turrets. These employees also answer many letters by telephone.* In addition, other specialists compose written replies to the letters that come in from stockholders by every mail. In recent years these calls and letters have averaged about 15,500 a month—750 each business day. The largest quantity handled in any one month (exclusive of special security issue periods, of course) was 30,000, in March 1950, for a daily average of 1,200. The volume is subject to sudden rises, being stimulated by special events such as stockholders' meetings, new security offers, and even stock-market flurries or the like. Sometimes these rises occur practically over night, and require a speedy marshalling of resources to cope with them.

Life in the Communications Bureau, therefore, is full of the revealing and sometimes quaint insights which tell so much about the personality of the stockholders who write us.

Stockholders over 75 years old often mention their ages, the top probably being one who wrote, "I want you to know my position in life. On June 5th, I celebrated my 100th birthday."

A nurse holding over 100 shares said she got much of it from "grateful patients," and a housewife with 63 shares told how she scrimped and saved to accumulate it share by share, adding that it "represents the mink coat which I haven't."

A stockholder in Utah, whose occupation of tending sheep keeps him on the range most of the time, apologized for losing track of some of his checks.

A grandfather who had bought two shares for his little granddaughter wrote with typical pride, "She is smart, and while only six years old, I figure that some day she will make a valuable employee for the Company and the stock will be in the way of an introduction."

A new woman stockholder said her "investment represents a soldier's bonus, given a Gold Star Mother." Another, who wanted to buy some additional stock, said she would be "willing to pay for all the cost, trouble and detriment." And every so often a letter comes in verse, like the one from a man who felt guilty for changing his address too much:

We've changed it again
(We dread your dark looks)
You know we just do it
To mess up your books!

* See "Answering Stockholders' Letters by Telephone," QUARTERLY, October 1935.

Still another stockholder wished to convert his bonds into stock but wanted to avoid the issuance of a certificate for *13* shares which his bonds called for! He therefore instructed us to buy some more shares on the market and issue a larger certificate. But he inadvertently timed the mailing of his order to arrive on the 13th day of the month—and what is more, it happened to be a Friday! And to illustrate one more type of letter, we cite the elderly couple who wrote about their joint account: "We are round eighty years of age. We are retired. Winnie J. — is a single daughter (nurse). When we get old she will be the one to take care of us."

If one could have collected key samples of this correspondence throughout the years, the composite picture no doubt would tell a fascinating if not romantic tale. Reading them, we could have watched our corporate selves, through the eyes and in the words of our owners, from a small beginning to the greatly altered present. And among the more significant changes, we would find increased powers of expression. Definitely, the security-holder "family" has a voice, and to this extent it may bear out the thesis mentioned earlier: it is most articulate at the point that touches the pocketbook the most.

In general, this "voice" has a distinct quality, a simplicity and homeyness that give it much more individuality than would be found in more formal correspondence. Even after classifying the letters in certain broad groups, the variety is still apparent,

Bell System service of up to 40 years is represented in this group of correspondents, who can compose and dispatch as many as 400 letters a day

SUMMARY OF STOCKHOLDER CORRESPONDENCE, 1950

Type	*Total*	*Per Cent of Total*
Payment of Dividends and Related Work	66,996	35.9
Stock Transfers	33,724	18.1
Conversions of Bonds or Debentures into Stock	25,847	13.8
Other Bond Transactions such as Exchanges, Registrations, etc.	4,094	2.2
Purchase and Sale of Securities	2,932	1.5
Replacement of Lost and Destroyed Securities	4,677	2.5
Employees' Stock Plan	4,154	2.2
Handling Special Proxies for Stockholder Meetings	37,413	20.1
Miscellaneous (Stock and Bond Prices, Questions Bearing on Security Issues, Tax Matters, etc.)	6,644	3.7
TOTAL	186,481	100.0

as one can see from the accompanying summary of cases handled during a typical recent year.

It is impossible to match the extreme simplicity of many of the incoming letters, but our replies always try to express warmth and cordiality. All our answers are as personal, understandable, and pleasing as they can be made. We cannot claim to have developed a "style" of our own, but there is certainly little evidence of "gobbledegook." Our aim is clearly expressed in the request of a stockholder who once asked that we reply "in words an 8th grade student can understand, so I won't have to hire a lawyer to translate it." That our efforts have met with some success is evidenced by the following response—which is typical of many similar comments that have reached us:

"Please pardon me for asking these questions but I consider the A.T.& T. not only the best-managed Industrial in U.S.A. but also the one that furnishes more small services than any other company in the world."

Stock Transfers

THE BACKGROUND of intense human interest of the letters received is perhaps most apparent among those in the group listed in the table as "Stock Transfers." This is particularly true with those technically known as fiduciary cases—that is, when a stockholder has died and his administrator is functioning, or when a trust has been set up. It is necessary for us to inspect wills in most of these cases, in order to see that each transfer obeys the instructions of the decedent, and rarely does the character of a man come to light more conspicuously than in the making of his will.

We see wills that are brief and others that are small tomes. Some arrive in verse, many are hand-written, and one is reported to have been inscribed on the cuff of a shirt. The will that disposes of treasured heirlooms is always illuminating, and foreign wills submitted in duplicate in

both English and the foreign tongue are formidable in every respect.

Sometimes we learn the origin of bequests. Two stockholders chanced to meet one day, and one stockholder asked the other what he should do with 100 shares of telephone stock he wanted to give to some worthy cause. Stockholder No. 2 suggested a memorial to the former's deceased wife, at the local social-service center. And, like a little acorn, a large and substantial growth followed. The fund has now accumulated enough money, we learn, to build a gymnasium for underprivileged children.

It is also necessary for us to inspect a great many death certificates in connection with transfers, and it may be surprising to learn that there is human interest of a sort in these otherwise unattractive bits of paper. These notices give us in the aggregate quite a different impression, in any event, from that of an Arkansas apple grower who once wrote:

> "Out of all the hundreds of thousands of stockholders you have, there must be a number of death notices reaching you every day, so it is no wonder you have to be exact. That would wear me to a frazzle. I'd rather gamble with war, worms, and weather on fruit crops and play tag with competitors any day. . . . But every man to his job, and every job to its man."

THE FUNCTION of our Communications Bureau in stock transfer cases is chiefly to request additional legal material, when needed, and to interpret—with the advice of our counsel—the intent of bequests, inheritances, trust funds, and the like, as far as they affect the transfer of telephone securities. Much of this meeting of minds is with lawyers and trust companies, but a substantial segment is direct with the stockholders or their survivors—usually those holding only a few shares. The Company's role with the latter is frequently almost as intimate as that of a family solicitor.

The outstanding human traits revealed in this type of correspondence are probably the thrift, foresight, and judgment which our stockholders demonstrate in great abundance. While some are more successful than others, their regard for their telephone shares—whether many or few—invariably seems to be high. The tone of our Bureau's service to the persons handling these estates must, therefore, reflect genuine respect for the lifetime achievements of the decedents. However, it is appropriate upon occasion to express a word of sympathy to the survivors—a gesture which is likely to be appreciated.

Dividend Correspondence

A MUCH MORE DYNAMIC atmosphere pervades the correspondence about dividends—our Bureau's largest single unit. Here the stockholder is very much alive, is interested in receiving and using dividend checks, and is likely to become upset if they are delayed.

Not all are as philosophic as the California lady who didn't mind waiting the required time for a duplicate, writing that "I am not going to let the T. & T. get me down when I have Bluebirds and Sweet Peas growing in my back yard." Mistakes and misunderstandings seem more dramatic in this field, and the quite hu-

man frailties of carelessness, absent-mindedness, and excitability are sometimes in evidence. In each dividend period, some 1,000 stockholders fail to notify us of recent changes of address, and their checks come back undelivered by the post office. Others who lose or accidentally destroy their checks get panicky, and the Company has to hold their hands, so to speak, until they calm down.

There is unending opportunity to make friends during the process of straightening out these difficulties, and many very appreciative letters resulting from our service are on file. A little more enthusiastic than the average, perhaps, but not too unusual, was the following note of thanks to the Company which arose from a small incident of this type:

"I feel, as an inconspicuous stockholder, a definite loyalty and proprietorship in the Company. My stock is three generations old—most of it. That feeling may not seem important to you in your position but it is important. . . ."

Other responses have to do with corrections of addresses and titles. Minors, for instance, are quick to let us know when they reach the "noble age of 21 years" and ask us to remove the minor status from future checks.

One of our perennial "friends" is a railroad maintenance foreman with a foreign name, who apparently works only in the open seasons, from April through November, in the Middle West. He is seldom employed by the same railroad two years in succession, and is inaccessible while on the job. His checks accumulate, and once a year he "write to you very truly Im no work right now and have expenses just like an time. Wish you Mary Christmas and Good Year."

Another stockholder, living in a city which is division headquarters of an important railroad, wrote at great length to explain that the address we carried on our books for him was a number not actually in existence but which would have him "living right on the railroad tracks with trains coming along at 60 miles an hour."

Sometimes small differences in the spelling of names* cause the opening of unnecessary extra accounts, and the stockholders themselves, or their representatives, generally call this to our attention. "Clare H. Smith and Clare H. Smyth are one and the same person, having been our client for many years," wrote a lawyer, continuing: "Mrs. Smyth was for many years a widow of genteel Southern birth and don't you for a moment forget it, Suh!"

If one were to analyze this branch of stockholder correspondence in terms of its human characteristics, the qualities exhibited would probably turn out to be approval and enjoyment of the earnings of the business, a certain vivacity of viewpoint, and occasional demonstrations of temperament. All of these qualities give the Communications Bureau opportunity to render a personalized service, and it tries to fulfill the opportunity by answering each case as understandingly and rapidly as possible.

Bond Conversions

SINCE 1941, there has been a great increase in the amount of convertible bonds outstanding in the hands of

*Names used are fictitious.

our stockholders, and for thousands of them these are the first bonds ever seen. A large majority, of course, handle their bonds properly and without trouble, but unfamiliarity leads others into many mistakes which roam far afield. Holders have been known to send us the entire bond with all coupons, merely to collect one coupon that is due. Many want to convert when they say "exchange" and exchange when they say "redeem." Such correspondence has to be handled in a spirit of understanding that combines both intuition and patience.

This group of telephone specialists can handle more than 1000 telephone contacts a day

In addition to answering specific questions about the terms of a given bond, it often proves necessary to include some elementary instruction regarding bonds in general. The inquiries disclose varying degrees of bewilderment, and our replies must be factual, clear, and contain some salesmanship—trying to sell the idea that bonds are not "boobytraps," as one correspondent indignantly described them.

A reply to a modest bond conversion service of this type speaks eloquently for itself:

"The courtesy of a telephone call from the office of the Treasurer of the Company to a prospective purchaser of only six shares of stock—a person-to-person call from New York to St. Louis—is *big business*. As a minister of the Gospel with fifty-one years of service, I could wish that the Church might see the value and practice such art of public relations."

Since 1941, the Company has had four issues of debentures outstanding which have been convertible into shares of stock under certain terms requiring cash payments in various amounts. In the intervening years, there have been several occasions when the market prices of some of these bonds and of the stock created opportunities for the bondholders wishing to convert to sell their bonds and buy stock on the market at less actual cost than converting in the prescribed manner. During these intermittent periods, the Company called attention to this situation when such bonds were surrendered for conversion, and many bondholders were thus able to save considerable sums in individual transactions. The aggregate saving is not known, but it is believed to exceed $500,000, and benefited several thousands of our stockholders. This service has brought many expressions of appreciation, one bondholder thinking it "the finest display of public relations" he had ever known. Another, and one of the best, was:

"Your letter confirms the opinion that I long have had that not only is your concern well managed, but the management is Trustee-minded as far as the stockholders are concerned."

Replacement of Lost Securities

THERE IS one type of case which everyone would like to see completely eliminated: that pertaining to lost securities. The instinct to hide stock certificates, bonds, and other valuables in one's favorite mattress, bible, or mail-order catalog seems to be irresistible; such spots are much more attractive to many than a safety deposit box at the bank! The Company attaches a "Caution Slip" to new stock certificates, but despite this, literally thousands continue to be secreted in the old-fashioned manner.

It is inevitable, therefore, that a certain number of owners of the stock wake up some morning to find their securities missing. Then comes the distress call to the Company for a replacement—as though it were as simple as replacing a lost glove. But, fortunately, more than half the applicants find the missing papers before they go to the expense of a surety bond, which is the primary requirement before a replacement can be made. This happy outcome is probably often due to the Company's suggestion in all cases to search further and wait at least six months before taking action.

Most of the recoveries are made fairly promptly. But one case came to light in August 1950 that was 26 years old. As sometimes happens when a person moves, an old desk was cleaned out and the missing certificate—first noted as lost in 1924—was exposed once more to the light of day. The stockholder had never requested a replacement, but said that she had had a prolonged period of uneasiness and was now glad to regain her "peace of mind."

A bizarre experience which ended happily and cost no one any suspense or concern was that of a woman who had subscribed for $1,100 of convertible debentures of the 1949 bond issue. Shortly after she received the envelope containing her bonds, she went shopping for shoes, and tried on a pair at her local shoe shop. She did not buy these particular shoes, and they were restored to their box and replaced on the shelves of the shop. They must have been an unpopular size or model, as 13 months passed before the box was again opened—and there lay the envelope containing the $1,100 principal amount of bearer bonds! Meanwhile, the owner had moved peacefully away to another town without becoming aware of her loss. The local police department, which was called into the case, had to communicate with the Company to trace the owner.

There are always exceptions to the best of rules, and one request for replacement of A.T.&T. stock received only recently was because the certificate "was left in a safe that cannot be opened."

Bureau of Missing Stockholders

ONE OF THE unique developments in our correspondence has to do with the tracing of "missing stockholders." When any dividend checks are returned to the Company by the post office as undeliverable, the reason is

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

195 BROADWAY, NEW YORK 7, N. Y.

To Stockholders:

Your stock certificate is a valuable paper. It is important to put it promptly in a secure place to prevent loss, theft or destruction.

A safe deposit box in a fireproof and burglarproof vault is an excellent place in which to keep this certificate.

In most cases of stock certificates reported lost, stolen, or destroyed, the loss would have been prevented if reasonable care had been exercised in their safekeeping. In securing new certificates to replace those which cannot be recovered, stockholders are necessarily caused considerable inconvenience, delay, and some expense.

D. R. BELCHER, Treasurer

A change in a stockholder's address should be reported promptly.

The Treasurer reminds stockholders that their stock certificates are valuable possessions

investigated promptly. Despite a very thorough effort to obtain a better address and make delivery, there are always a few stockholders who cannot be traced through the usual channels; and over a period of time these become assigned to a group of accounts which now number some five or six hundred names. These cases comprise a "missing persons" list, and we become almost a detective agency in tracing these lost people. The results have been not only gratifying but astonishing. One stockholder, for example, was recently located in a western city shortly after a brother in Maine had told us that "he said goodbye to his mother in 1891 and we haven't heard from him since." Since this work started, in the latter part of 1948, a total of 400 cases has been cleared up and checks having a value of more than $34,000 have been delivered to the rightful owners. The oldest case dates back to January 1925.

Proxy Mail

In April each year—and sometimes later in the year also if a special meeting is to be held—proxies are sent to all stockholders with the announcement of a stockholders' meeting.

The reaction to the proxy material invariably brings the Communications Bureau about twenty thousand or more messages for special handling. Many of these involve improperly executed proxies, which have to be returned for correction, but the most interesting part of this mail is known as "proxy comments." These communications ask searching questions about the telephone business, or about the subjects to be considered at the meeting.

Because they may have to include matters of general Company policy, the replies to the proxy comments must reflect the opinion and judgment of the executive management, and they are prepared under the close supervision of senior officers. The

subjects cover as wide a range as the Company itself, and, as one would expect, extremes of both praise and criticism are received. By far the majority of the comments are, of course, favorable and complimentary. Few more sincere tributes have been received, for example, than this excerpt from a note from a stockholder who is not a telephone employee himself but who obviously was brought up in the best traditions of the Bell System:

"Growing from a teen-age piggy bank and sale of World War I Liberty Bonds, my holdings eventually reached that of the statistically average stockholder (31 shares). . . . But tonight I vote on actual issues and sign my proxy with a memory and silent tribute for my father, — — —, retired after 42 years and on a pension from — Bell until his recent death January 29th. Every x on this proxy is made as if he were over my shoulder and as, in his development of my character in younger years, he would want me to vote without saying so."

These letters, comments, and opinions—both pleasant and otherwise—represent the most outspoken communications which the Company receives from its owners each year, and they receive very attentive consideration. They come from a small fraction of the total stockholder family, perhaps, but when studied in perspective, year in and year out, they have been a healthy and constructive influence. All of the replies to these letters are very highly personalized.

Other Types of Correspondence

THERE ARE other types of correspondence with stockholders which, though small in quantity, arouse no little interest from the point of view of stockholder relations.

No matter how much the Company dislikes being involved in litigation, it cannot avoid being in the middle whenever the ownership of stock is the subject of a legal dispute. There are usually about a hundred cases of this kind going on, generally due to family squabbles and marital separations, over stock held jointly.

Contrasted with these comparatively few unhappy situations, the joint tenancy form of registration to provide survivorship, whose popularity has grown tremendously, is now used by more than 150,000 pairs of friends and relatives—presumably husbands and wives for the most part. On a percentage basis, therefore, our comparatively few unfavorable insights are far outweighed by the happy ones. Also, and among the happiest, never a day goes by without receipt of several notices from women stockholders that their names have been changed to something else preceded by "Mrs." What, they ask, does the Company want to do about it?

Special Services

ANOTHER interesting department of stockholder correspondence might well be described as that of special or collateral services.

Some of these one would naturally expect, such as supplying information for income tax purposes. We receive letters from stockholders every day asking for data which will help them establish a cost basis for their shareholdings; and shortly before March 15 each year, there are hundreds of requests for reports on dividend payments.

One would also expect to see requests from stockholders for admission tickets to the *Telephone Hour* radio broadcasts which arrive from time to time, for help in obtaining telephone service of various kinds, or for assistance in the purchase and sale of our securities.

There are other special services, however, which might be considered outside the regular line of duty; but if they can be handled without too much difficulty, they are usually undertaken, and bring a favorable response. Some of these include requests for odd bits of information, such as the following:

"What I want to know is whether a person in a penal institution, or a baby, or an insane person that cannot write his name, can own stock in a company such as yours, as far as laws and company rulings are concerned. What caused these questions was a discussion, which in turn was caused by a woman's statement that she was going to buy a Government Savings Bond for a dog." *

As other examples, a number of French stockholders prevailed upon us shortly after World War II to arrange shipments of much needed articles from New York department stores, using their accumulated dividends to pay for them; and a man requested us to forward a letter which resulted in his locating a long-lost brother—a stockholder—from whom he had been separated for 25 years. We got credit for the reunion!

Stockholders' Names

THERE IS, too, the charm of the varied names we cannot avoid examining and momentarily pondering over. Every letter has a name or two, and there is a thrill—to note how often the name of a writer is about what one might expect for the case in hand.

There are names from all known foreign origins; there are English, American, and Biblical names; there are the Scandinavian names one would expect affixed to letters from Minnesota; Central European names in the steel producing areas; and good German names from Wisconsin. One sees an occasional woman stockholder with the given name of "John," as they have it down in Carolina, and plenty of women "Willies" and "Frankies" and "Georgies" in Texas. There was the instance of the Carolyn Laundry, which was inadvertently addressed as "Dear Miss Laundry." And occasionally some of the "Carols," "Evelyns," or "Marions" who are men resent being addressed as "Miss." It was one of those who wrote us:

"I tank you very much for the dividend check I received this morning but please let me tel you that I am a *man not* a *woman*, and I would greatly appreciat if you change that mistake. thank you."

The Letter-Writers

VARIOUS METHODS are employed for handling stockholder correspondence, and of course these are the subject of constant study. Continuous efforts are made to assure the genuinely personal treatment that our stockholders have come to expect as owners and customers of the Bell System. Because of the large volume of letter writing required, various well known devices are adopted for

* The answer to such questions is *yes*, provided there is in each instance a properly authorized legal representative.

speeding production. Certain statements or paragraphs, for instance, can be used in many different letters. All of the correspondents are instructed, however, to use these only as foundation material, and every correspondent is encouraged to vary letters to meet the individual situations.

Our discussion would be incomplete without a word about the correspondents themselves. The backbone of the force consists of employees with many years of experience in handling correspondence with stockholders. Most additions in recent years have been graduates of women's colleges who majored in English or Economics and they have been quick to respond to their training. In general, the standards are exacting, and the more able the correspondent, the more the work will absorb his or her full powers and capacity. In 1669, a book was published in England about the qualities with which a "Compleat Solicitor" should be endowed* and its precepts fit so remarkably the qualities desired in a good correspondent that they are worth summarizing briefly here, adapting the choice phrases of the original as much as possible:

First, he ought to have a good natural wit.

Secondly, that wit must be refined by education.

Thirdly, that education must be perfected by learning and experience.

Fourthly, and, lest learning should too much elate him, it must be balanced by discretion.

Fifthly, to manifest all these former parts, it is requisite that he have a voluble and free fluency to utter and declare his concepts.

**"The Compleat Solicitor" of 1669 (second edition, 1683), reviewed in "Confessions of an Uncommon Attorney" by Reginald L. Hines, 1948.*

The Future

As THE NUMBER of stockholders increases, one may be sure that the correspondence will grow in quantity. Simple expansion, however, should not be the principal thought when trying to anticipate what may lie ahead in this field. Nobody can predict what the equity owners of American business may be facing, but one thing may be definitely relied upon: whatever changes and developments may occur, the correspondence relationship with stockholders is here to stay and will grow in its usefulness and importance.

If it be true (as many believe) that business leadership is a public trust, and that it has a duty to support the economy which has resulted in our standard of living, the correspondence relationship between management and owners is a very important strand in the life-line or unifying principle of the system. It is possible to develop a very responsive formula in support of this principle, a sort of "stockholder relations quotient" with which to encourage the success of good stockholder correspondence. This formula was expressed for all time by William Shakespeare, when he proclaimed:

One touch of nature makes the whole world kin.

Twenty-five Years Ago in the

BELL TELEPHONE QUARTERLY

Items from Volume V, Number 2, April 1926

The Telephone's Fiftieth Birthday

IN RECOGNITION of the 50th birthday of the telephone on March 10, 1926, many congratulatory communications were received at the headquarters of the American Telephone and Telegraph Company. The following telegrams were of particular interest:

Ft. Myers, Fla., March 10, 1926.

WALTER S. GIFFORD, *President*
American Telephone and Telegraph Company,
195 Broadway, New York.

Founded on science and great business sagacity the march of the telephone has been steadily onward and upward to the stupendous success of the present day. The end is not yet. I heartily congratulate the company and its personnel on the celebration of its Golden Jubilee.

THOS. A. EDISON.

New York, March 10.

THOMAS A. EDISON,
Fort Myers, Florida.

We greatly appreciate your kind message of congratulation. Your unique position in the field of science and invention gives to your generous commendation of telephone progress greater weight than could come from any other living American, and encourages us to accept the grave responsibilities of future development and growth.

WALTER S. GIFFORD.

March 10, 1926.

MR. THOMAS A. WATSON,
Passagrille, Florida.

We remember today with feelings of deep appreciation that on March 10, 1876, there was spoken into the telephone the first complete sentence ever transmitted by electricity. It was Alexander Graham Bell who spoke these words and it was you who heard them. Bell was the first to speak through the telephone and you were the first to hear. The instruments were invented by Bell but they were made under his direction by you, with your own hands, and you ran the first telephone wire over which these words were carried. This historic sentence was spoken in a room at 5 Exeter Place in Boston. The wire transmitting these words was less than fifty feet in length extending only to another room in the same building. On that day the personnel of the Bell System consisted of but two, Dr. Bell and yourself. Today, March 10, 1926, hundreds of thousands of members of the Bell System, including our connecting companies, throughout the United States are celebrating this historic achievement of which you are now the only survivor. From their hearts there goes out to you today the words of Bell when he spoke the historic first sentence, "Mr. Watson, come here; I want you." On behalf of the men and women of the Bell System I send you on this, the fiftieth anniversary of the telephone, congratulations and best wishes.

W. S. GIFFORD.

St. Petersburg, Fla., March 10, 1926.

W. S. GIFFORD, *President*
American Telephone and Telegraph Co.,
New York, N. Y.

I am very grateful to you for your kind telegram of today and thankful that I was chosen by the fates to be the associate of Alexander Graham Bell in his wonderful work and happy that I may call myself one

of the splendid body of men and women who have made of Bell's invention an instrument of such tremendous service to mankind.

THOMAS A. WATSON.

From "Notes on Recent Occurrences"

The Aurora Borealis

ON THE MORNING of January 26th of this year (beginning between ten and eleven o'clock eastern standard time) difficulty was experienced in operating the grounded telegraph circuits over a part of the United States and Canada. This was true of the circuits of the telegraph companies and railroads as well as to those of the Bell System. At once the report went out that an aurora borealis was in progress. It was broad daylight, so of course no aurora was seen, but the erratic behavior of the circuits was easily identified with that which years of observation have shown to be usually associated with auroral displays. Whether there actually was an aurora on the day in question will probably never be known because the earth currents which are the direct cause of the erratic behavior of the telegraph lines sometimes appear without the accompaniment of any luminous display in the northern sky such as the term aurora calls to mind.

It is not frequent, to have a display of this sort so extensive as to be severely felt in both Europe and North America. However, one of the most extensive as well as powerful auroras occurred within the memory of all of us—May 14–15, 1921. This display was brilliant both in Europe and America and the accompanying earth currents were sufficiently severe, not only to cripple telegraph service for the time being but to burn out heat coils and char the paper insulation of cables where these contained grounded circuits. The foreign potentials observed on telegraph circuits in some cases attained momentary values as great as 500 volts. . . .

Engineers of the Bell System have been collecting data for some time on effects produced by meteorological disturbances, particularly in connection with earth potential differences and radio transmission.

In the study of earth potential differences, the direct current telegraph circuits of the Bell System which connect widely separated points afford a means for obtaining data. Many practical difficulties arise, however, such as ground potential disturbances caused by the operation of trolley lines, leakage from conductors to ground which vitiate the accuracy of measurements. Furthermore, when the aurora disturbances are most severe, the first duty of the test board forces is to restore the service on any lines which are affected by it. Many observations have been made, however, in accordance with a prearranged schedule. The results obtained have yielded considerable information as to the characteristics of earth potential differences during such periods of disturbance.

In long distance radio transmission, the observations which have been made by Bell System engineers indicate that meteorological disturbances sometimes have an important effect. Data have been obtained indicating that certain relationships exist between effects produced by magnetic storms and radio reception.

What more significant data may become available in the future it is not possible to predict. Nevertheless, through continuing measurements of earth potentials and radio-transmission phenomena, the Bell System engineers have an opportunity to supply valuable data and give material assistance in the study of those factors being investigated by the cosmical physicist.

From an article of the same title by Robert W. King

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